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Suggestion:
Cut out; frame neatly; put in show window; change weekly.

Looking over the firms engaged in various lines of commercial activity one is impressed that the most successful are those who manufacture and sell "quality goods." We do not know of any firm who are admittedly disposing of inferior goods who could be called even moderately successful. Even if it were not a pleasure to install only plumbing and heating goods bearing the maker's name and guarantee, it would be poor business policy to do otherwise.

Hot Water Heating Designs

Very rapidly are heating engineers bringing the design and construction of steam and hot water heating systems to a scientific basis. Credit for the rapid improvement noted in this branch of engineering is due in part to the fine spirit which actuates the engineers themselves, forcing them constantly to improve where investigation suggests better methods; some of the credit is due to the American Society of Heating and Ventilating Engineers, which in its papers and discussions stimulates its members to habits of scientific observation and investigation; and, I may say with modesty, that much of the credit is due to the highly efficient trade press of this country, the editors of which, by being constantly alert to the necessity of securing good technical "copy," have very greatly added to the fund of heating engineering literature. I am very happy this week in being able to present to the heating trade a new authority,—one who I believe has not heretofore been a contributor to heating literature. Professor F. E. Giesecke, of Texas, begins in this issue a series of articles on "Determining the Sizes of Pipes in Water Heating," a subject which, I believe, has never been so well treated. Professor Giesecke is a pupil of the great German engineer, Professor Rietschel, and I am sure all our heating engineers will be glad to read all the articles in this series. Subscriptions may be ordered to begin with this issue.

Plumbing Codes

Law is the crystallized sentiment of a community, regulating the relations which each member should bear to the others in order that the greatest good may come to the greatest number. So rapidly are communities developing into towns of sufficient size to require general systems of water supply and sewage disposal, that the relations between citizens which grow out of these new conditions are demanding with constantly increasing urgency the passage of ordinances governing the design and construction of plumbing. This letter, received last week, is a good example of this demand:

"Quite frequently we have a request for copy of an ideal plumbing ordinance. While we do not believe that there is a plumbing code in existence that could be considered ideal, or even nearly perfect, there are a number of good ones and we would like to know if you can cite us to what you consider a first class plumbing code.

"We would appreciate it very much if you could tell us what provisions you think a plumbing code should have, dealing particularly with the features generally embodied in a plumbing code that should not be there, and with those that are omitted that should be included.

"We will appreciate it greatly if you will go considerably into detail in this matter as we are more than ordinarily interested in promoting the adoption of plumbing codes that will be productive of better sanitary conditions, and know that you are in a position to deal with this subject in a thorough and practical manner."

It seems to me very timely, therefore, to begin in this issue, a series of articles on **"An Analysis of the Plumbing Codes of the Principal Cities in the United**

States," by Thomas S. Ainge, Sanitary Engineer of the Michigan Department of Health. The author is unusually qualified by experience and position to make this study of value to every person interested in the subject.

Jno. K. Allen.

The Determination of the Sizes of Pipes for Hot Water Heating—I

By F. E. Giesecke, M. E.

Professor of Architectural Engineering and Drawing, Agricultural and Mechanical College of Texas.

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PREFACE.

The method of heating buildings by means of hot water is superior in several respects to other methods and is in very general use for heating residences, hospitals, green-houses, and other buildings in which it is desired to maintain a uniform temperature continuously.

Large numbers of such systems are being installed annually; it is therefore important to attain the highest possible degree of perfection in their construction.

In order that a hot-water system may operate successfully the sizes of the pipes connecting the heater and the radiators must be proportioned so that every radiator will receive its proper share of the total heat.

The flow of water from the heater to any one radiator is produced and accelerated by the difference in the weight of hot water in the supply pipe leading to the radiator and of the cooler water in the return pipe from the radiator; this difference in weight, expressed in proper units, is the pressure-head of the radiator; an indefinite increase in the velocity of the water is prevented, and the flow held within definite limits, by the frictional resistance of the pipe system; this resistance, expressed in proper units, is the friction-head of the system for the radiator.

A correct design of the pipe system consists, therefore, of proportioning it so that the friction-head of every radiator will be equal to its pressure-head when the water flows with a velocity necessary to convey the proper quantity of heat.

In the following series of examples I have endeavored to explain a method of designing pipe systems for hot-water heating which I believe to be correct in principle, simple enough to admit of easy application in practice, and sufficiently accurate to insure satisfactory results in every instance, no matter how complicated or extensive the system may be.

There may be slight inaccuracies in the final results attained by the use of the diagrams given below, since, for want of better and more complete data, I had to use constants which were determined by experiments made under conditions differing from those which exist in a hot-water heating system and, in some instances, had to interpolate and to assume constants in order to construct the diagrams; but it is very probable that errors arising from these causes will affect all radiators similarly so that the heating system will still operate satisfactorily even though the friction-head may not be exactly what we calculate it to be.

I am indebted to Prof. Rietschel for the two principal features of this method, namely, those of adjusting the friction-head of every radiator so as to make it equal to the pressure-head and of dividing the pipe system into a number of sections and calculating the friction-head of each section separately.

F. E. Giesecke.

College Station, Texas, May 24, 1909.

Example 1. Let it be required to determine the size of the pipe necessary to supply the radiator R, shown in Fig. 1, with 10,000 B. T. U.* per hour, from the heater H.

In order that the radiator may give off heat continuously there must be a steady flow of hot water from the heater to the radiator and a similar flow of

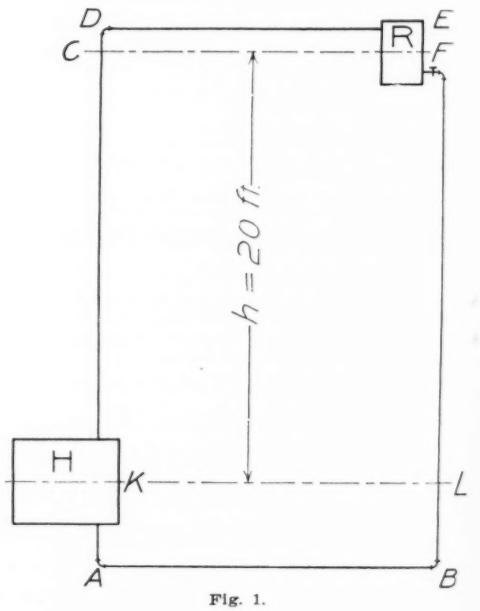

Fig. 1.

cooler water from the radiator back to the heater. Let us assume that the water supplied to the radiator has a temperature of 185°, that it is cooled in the radiator to 155°, and returned at this temperature to the heater, where it is again heated to 185°; in that case the average temperature of the water in the radiator and in the heater will be 170°.

Unless the supply and return pipes are well insulated, the water circulating in these pipes will

*A British thermal unit, abbreviated B. T. U., is the quantity of heat necessary to raise the temperature of one pound of water from 62° to 63° F., or, with sufficient accuracy for practical purposes, one degree Fahrenheit.

be cooled somewhat; the water entering the radiator will be cooler than the water leaving the heater, the water entering the heater will be cooler than that leaving the radiator, and it will be necessary to maintain an average temperature of 175° or perhaps 180° in the heater in order to have an average temperature of 170° in the radiator.

This cooling of the water in the supply and return pipes has practically no effect upon the sizes of the pipes necessary to supply the radiators with the weight of the column of cold water in the return pipe and the column of hot water in the supply pipe. The water in the return pipe is cooler and therefore heavier than the water in the supply pipe, and the pressure on the water in the horizontal pipe AB, Fig. 1, is greater at B than at A. This difference in pressure causes the water to flow from B toward A and produces the circulation of the water which is necessary to convey the heat from the heater to the radiator.

TABLE NO. I.

Wrought Iron Welded Steam, Gas and Water-Pipe.*

TABLE OF STANDARD DIMENSIONS.

Diameter.			Thickness.	Circumference.		Transverse Areas.			Length of Pipe per Square Foot of		Length of Pipe Containing One Cubic Foot.	Nominal Weight per Foot.	Number of Threads per Inch of Screw.
Nominal Internal.	Actual External.	Actual Internal.		External.	Internal.	External.	Internal.	Metal.	External Surface.	Internal Surface.			
Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Sq. In.	Sq. In.	Sq. In.	Feet.	Feet.	Feet.	Pounds.	
⅛	.405	.27	.068	1.272	.848	.129	.0573	.0717	9.44	14.15	2513.	.241	27
¼	.54	.364	.088	1.696	1.144	.229	.1041	1249	7.075	10.49	1383.3	.42	18
⅜	.675	.494	.091	2.121	1.552	.358	.1917	.1663	5.657	7.73	751.2	.559	18
½	.84	.623	.109	2.639	1.957	.554	.3048	.2492	4.547	6.13	472.4	.837	14
¾	1.05	.824	.113	3.299	2.589	.866	.5333	.3327	3.637	4.635	270.0	1.115	14
1	1.315	1.048	.134	4.131	3.292	1.358	.8626	.4954	2.904	3.645	166.9	1.668	11½
1¼	1.66	1.38	.14	5.215	4.335	2.164	1.496	.668	2.301	2.768	96.25	2.244	11½
1½	1.9	1.611	.145	5.969	5.061	2.835	2.038	.797	2.01	2.371	70.66	2.678	11½
2	2.375	2.067	.154	7.461	6.494	4.43	3.356	1.074	1.608	1.848	42.91	3.609	11½
2½	2.875	2.468	.204	9.032	7.753	6.492	4.784	1.708	1.328	1.547	30.1	5.739	8
3	3.5	3.067	.217	10.996	9.636	9.621	7.388	2.243	1.091	1.245	19.5	7.536	8
3½	4.0	3.548	.226	12.566	11.146	12.566	9.887	2.679	.955	1.077	14.57	9.001	8
4	4.5	4.026	.237	14.137	12.648	15.904	12.73	3.174	.849	.949	11.31	10.665	8
4½	5.0	4.508	.246	15.708	14.162	19.635	15.961	3.674	.764	.848	9.02	12.34	8
5	5.563	5.045	.259	17.477	15.849	24.306	19.99	4.316	.687	.757	7.2	14.502	8
6	6.625	6.065	.28	20.813	19.054	34.472	28.888	5.584	.577	.60	4.98	18.762	8
7	7.625	7.023	.301	23.955	22.063	45.664	38.738	6.926	.501	.544	3.72	23.271	8
8	8.625	7.982	.322	27.096	25.076	58.426	50.04	8.386	.443	.478	2.88	28.177	8
9	9.625	8.937	.344	30.238	28.076	72.76	62.73	10.03	.397	.427	2.29	33.701	8
10	10.75	10.019	.366	33.772	31.477	90.763	78.839	11.924	.355	.382	1.82	40.065	8
11	11.75	11.0	.375	36.914	34.558	108.434	95.033	13.401	.325	.347	1.51	45.028	8
12	12.75	12.0	.375	40.055	37.7	127.677	113.098	14.579	.299	.319	1.27	4 .985	8
13	14.0	13.25	.375	43.982	41.626	153.938	137.887	16.051	.273	.288	1.04	53.921	8
14	15.0	14.25	.375	47.124	44.768	176.715	159.485	17.23	.255	.268	.903	57.893	8
15	16.0	15.43	.284	50.26	48.48	201.06	187.04	14.02	.239	.248	.77	47.11	8
16	17.0	16.4	.3	53.41	51.52	226.98	211.24	15.74	.225	.233	.68	*52.89	8
17	18.0	17.32	.34	56.55	54.41	254.47	235.61	18.86	.212	.221	.61	63.37	8

*Carpenter's "Heating and Ventilating Buildings."

proper quantities of water and it will, therefore, be neglected in these calculations.

Since each pound of water which flows through the radiator is cooled 30° in the radiator, it will give off 30 B. T. U., and since 10,000 B. T. U. are to be supplied to the radiator per hour, it is necessary that $\frac{10{,}000}{30} = 333$ lbs. of water, or $\frac{333}{60.77} = 5.5$ cu. ft. of water flow through the radiator per hour.

If the pipe (the size of which is to be determined) were a 1" pipe, the velocity of the flow of the water in this pipe would have to be 5.5×166.9† = 918 feet per hour, or 26/100 feet per second.

This velocity of 26/100 feet per second must be produced and maintained by the difference in

†The length in feet of a 1" pipe, which contains one cubic foot, from Table 1.

To determine the difference between the pressures at A and B, it may be assumed that the temperature of the water in the radiator and in the heater changes gradually from 155° to 185°; the weight of the water in the radiator and in the heater would then be practically the same as if the temperature changed suddenly from 155° to 185° at the center of the height of the heater and of the radiator; in that case the column of water CD would balance the column EF and the column AK would balance the column BL (the cooling in the pipes DE and BA being neglected), and the difference in pressures at A and B would be equal to the difference in the weight of the column FL having a temperature of 155° and the column KC having a temperature of 185°; this is practically the case in systems which have been installed properly.

The height of the two columns of hot and cold

water which produce the flow to a radiator will be designated by the letter h; this height is always equal to the difference in elevation of the center of the radiator above the center of the heater, if the supply enters the radiator at the top. If the supply connection is at the bottom of the radiator, h is measured to that level instead of to the level of the center of the radiator.

In the case under consideration h is 20 feet; according to Table 2 the weight of a cubic foot of water at 155° is 61.08 and at 185° it is 60.44 lbs., the difference between the pressures at A and B is, therefore, at the rate of $20(61.08-60.44)=1.28$ lbs. per square foot.

This difference in pressure can also be expressed by the height of a column of water whose weight would exert the same pressure; assuming the temperature of this column of water to be 170° (the mean of the temperatures of the two columns producing the pressure), its height in feet can be found by dividing the pressure in pounds per square foot by the weight of one cubic foot of water in pounds, as given in Table 2, and is $1.28 \div 60.77 = 211/10{,}000$ feet.

This height is called the pressure-head, and will be designated by ph; Table 3 gives values of ph for values of h ranging from 2 to 60 feet and for differences in temperature of the water in the supply and return pipes, ranging from 20° to 60°; the average temperature of the water in the radiator being 170°. For any other condition the value of ph can easily be calculated as explained above.

To illustrate the use of Table 3, let it be required to find the pressure-head for a radiator having a value of $h = 38$ feet, the difference in the temperatures of the water in the supply and return pipes

TABLE NO. II.

Weight of Water per Cubic Foot for Various Temperatures.*

Temperature, Deg. F.	Weight, Lbs. per Cubic Foot.	Heat-units.	Temperature, Deg. F.	Weight, Lbs. per Cubic Foot.	Heat-units.	Temperature, Deg. F.	Weight, Lbs. per Cubic Foot.	Heat-units.
32	62.42	0.	93	62.10	61.06	154	61.10	122.33
33	62.42	1.	94	62.09	62.06	155	61.08	123.34
34	62.42	2.	95	62.08	63.07	156	61.04	124.35
35	62.42	3.	96	62.07	64.07	157	61.06	125.35
36	62.42	4.	97	62.06	65.07	158	61.02	126.36
37	62.42	5.	98	62 05	66.07	159	61.00	127.37
38	62.42	6.	99	62.03	67 08	160	60 98	128.37
39	62.42	7.	100	62.02	68.08	161	60.96	129.38
40	62.42	8.	101	62.01	69.08	162	60 94	130.39
41	62 42	9.	102	62.00	70.09	163	60.92	131.40
42	62.42	10.	103	61.99	71.09	164	60.90	132.41
43	62.42	11.	104	61.97	72.09	165	60.87	133.41
44	62.42	12.	105	61.96	73.10	166	60.85	134.42
45	62.42	13.	106	61.95	74.10	167	60.83	135.43
46	62.42	14.	107	61.93	75.10	168	60.81	136.44
47	62.42	15.	108	61 92	76.10	169	60.79	137.45
48	62.41	16.	109	61.91	77.11	170	60.77	138.45
49	62.41	17.	110	61.89	78.11	171	60.75	139.46
50	62.41	18.	111	61.88	79.11	172	60.73	140.47
51	62.41	19.	112	61.86	80.12	173	60.70	141.48
52	62.40	20.	113	61.85	81 12	174	60 68	142.49
53	62.40	21.01	114	61.83	82.13	175	60.66	143.50
54	62.40	22.01	115	61 82	83.13	176	60.64	144.51
55	62.39	23.01	116	61 80	84.13	177	60.62	145.52
56	62.39	24.01	117	61.78	85.14	178	60.59	146.52
57	62.39	25.01	118	61.77	86.14	179	60 57	147.53
58	62.38	26.01	119	61.75	87.15	180	60.55	148 54
59	62.38	27.01	120	61.74	88.15	181	60.53	149.55
60	62.37	28.01	121	61.72	89.15	182	60.50	150.56
61	62.37	29.01	122	61.70	90.16	183	60.48	151 57
62	62.36	30.01	123	61.68	91.16	184	60.46	152.58
63	62.36	31.01	124	61 67	92.17	185	60.44	153.59
64	62.35	32.01	125	61.65	93.17	186	60.41	154.60
65	62.34	33.01	126	61.63	94.17	187	60.39	155.61
66	62.34	34.02	127	61.61	95.18	188	60.37	156.62
67	62.33	35.02	128	61.60	96 18	189	60.34	157.63
68	62.33	36 02	129	61.58	97.19	190	60.32	158.64
69	62.32	37.02	130	61.56	98.19	191	60.29	159.65
70	62.31	38.02	131	61.54	99.20	192	60.27	160.67
71	62.31	39.02	132	61.52	100.20	193	60.25	161.68
72	62.30	40.02	133	61.51	101.21	194	60.22	162.69
73	62 29	41.02	134	61.49	102.21	195	60.20	163.70
74	62.28	42.03	135	61.47	103.22	196	60.17	164 71
75	62.28	43.03	136	61.45	104.22	197	60.15	165.72
76	62.27	44.03	137	61.43	105.23	198	60.12	166 73
77	62.26	45.03	138	61.41	106.23	199	60.10	167.74
78	62.25	46.03	139	61.39	107.24	200	60.07	168.75
79	62.24	47.03	140	61 37	108.25	201	60.05	169.77
80	62.23	48.04	141	61.36	109 25	202	60.02	170.78
81	62 22	49.04	142	61.34	110.26	203	60.00	171.79
82	62.21	50.04	143	61.32	111.26	204	59.97	172 80
83	62.20	51.04	144	61.30	112.27	205	59.95	173.81
84	62.19	52.04	145	61 28	113.28	206	59.92	174.83
85	62 18	53.05	146	61.26	114.28	207	59.89	175.84
86	62.17	54.05	147	61.24	115.29	208	59.87	176.85
87	62.16	55.05	148	61.22	116.29	209	59.84	177.86
88	62.15	56.05	149	61.20	117.30	210	59.82	178.87
89	62.14	57.05	150	61.18	118.31	211	59.79	179.89
90	62.13	58.06	151	61.16	119.31	212	59.76	180.90
91	62 12	59.06	152	61.14	120.32			
92	62.11	60.06	153	61.12	121.33			

*Kent's "Pocket-book for Mechanical Engineers."

TABLE NO. III.

Value of pressure head, in $\frac{\text{Feet}}{10{,}000}$ for various heights and various differences in temperature of water in supply and return pipes

Height in Feet	Difference in temperature, in degrees Fahrenheit, of water in supply and between pipes								
	20°	25°	30°	35°	40°	45°	50°	55°	60°
2	14	18	21	25	28	32	36	39	43
4	28	36	42	49	57	64	71	78	86
6	42	54	63	74	85	96	107	118	128
8	57	72	84	99	113	128	142	157	171
10	71	90	105	124	142	160	178	196	214
12	85	109	127	148	170	192	213	235	257
14	99	127	148	173	198	224	249	274	300
16	113	145	160	198	227	256	285	313	342
18	127	163	190	222	255	288	320	353	485
20	141	181	211	247	283	320	356	392	428
22	155	199	232	272	311	351	391	431	471
24	170	217	253	296	340	383	427	470	514
26	184	235	264	321	368	415	462	509	556
28	198	253	295	346	396	447	498	548	599
30	212	271	316	370	425	479	533	588	642
32	226	290	337	395	453	511	569	627	685
34	241	308	358	420	481	543	604	666	728
36	255	326	379	445	510	575	640	705	770
38	269	344	400	469	538	607	676	744	813
40	283	362	421	494	566	639	711	783	856
42	297	380	443	519	594	671	746	822	898
44	311	398	464	543	623	703	782	862	941
46	326	416	485	568	651	735	818	901	984
48	340	434	506	593	680	767	853	940	1027
50	354	452	527	618	708	799	889	980	1070
52	368	471	548	642	736	831	924	1019	1112
54	382	489	569	667	764	863	960	1058	1155
56	396	507	590	692	793	894	996	1097	1198
58	410	525	611	716	811	926	1031	1136	1241
60	425	543	632	741	850	968	1066	1175	1284

being 40° ; find 38 feet in the first column and then to the right of this figure, in the 40° column, find 538/10,000 feet, the required pressure-head.

In Fig. 2, let S and T represent two water tanks, open at the top, connected by the pipe SBAT, and filled with water at 170°, so that the surface of the water is 211/10,000 feet higher in the tank S than in the tank T ; the pressure at B will be greater than the pressure at A, exactly as in the case shown in Fig. 1 ; if the tank S is kept filled, the water will flow continuously from S to T.

The cases illustrated in Fig. 2 and Fig. 1 are alike, so far as the difference in pressures at B and A is concerned ; this difference in pressure produces

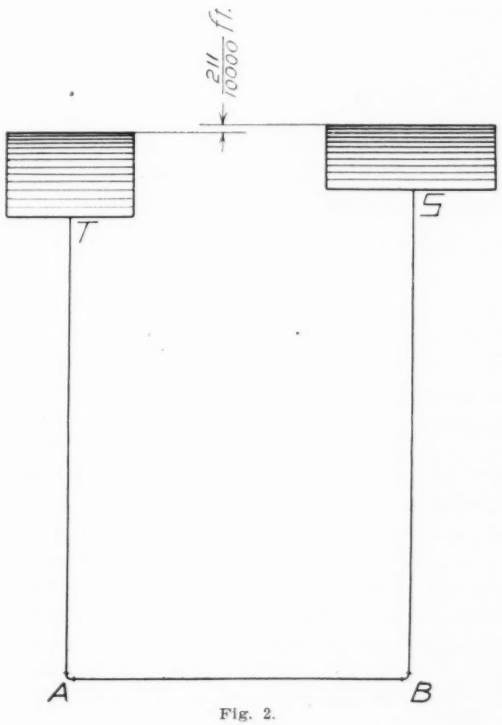

Fig. 2.

the flow of the water in both instances, but the two cases are very different in the following respect:

In the case shown in Fig. 2, the water is continually wasted from the tank T and new water supplied to the tank S ; the pressure-head of 211/10,000 feet in Fig. 2 is, therefore, used partly to impart velocity to the water and partly to overcome friction in the pipe system.

In the case shown in Fig. 1, the water is used over and over again and, after constant conditions have been attained, the water circulates with a uniform velocity and, therefore, no part of the pressure-head of 211/10,000 feet is necessary to impart velocity to the water, but all of it is consumed in overcoming the friction in the pipe system.

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An Analysis of the Plumbing Codes of Thirty-five of the Principal Cities in the United States

By Thomas S. Ainge, Sanitary Engineer, Michigan Department of Health.

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To those who have had occasion to peruse even a small percentage of the plumbing codes of the cities of this country, it will have been noted that, with but few exceptions, there is a great lack of uniformity, considerable ambiguity, and many omissions, in their several and, in some instances, important provisions.

The responsibility for the lack of uniformity in many of the codes is probably due to the fact that there is no scientific basis for the determination of the sizes of vertical soil, waste and vent pipes, and to the further fact that, heretofore, information respecting the various conditions under which traps may be affected by siphonage or back-pressure has been limited and, in some instances, misleading.

With the amount of thought and study which has been devoted to the subject of sewerage of buildings in recent years, it is believed that the time is ripe for more uniform, simplified and comprehensive codes governing such work. To this end, it will be the object of the following analysis to show wherein the various codes differ, and wherein they lack or are not sufficiently clear, upon matters of importance, the study being confined principally to the following subjects:

1. Administrative Body.
2. Examination, Licensing and Registration of Plumbers.
3. Examination of Plans and Specifications of Proposed Work.
4. Inspection and Testing of Work.
5. Standards of Work.
6. Penalties for Violations of Plumbing Codes.

In passing, it should be stated that many of the codes which will be considered were obtained for this purpose some time ago, and as it is possible that changes have since been made in some of these codes, letters of inquiry were recently sent to the

departments having jurisdiction over plumbing in each city. Responses were received in but twenty instances, and it is presumed that the codes of those cities not heard from have not been changed. It should also be stated that, unfortunately, it has not been possible for the writer to obtain copies of the codes of two of the cities in the class under consideration, viz., Los Angeles, Cal., and Memphis, Tenn., neither has it been possible to obtain an *official* copy of the new and comprehensive code of the city of Cleveland, Ohio.

EXHIBIT I.—The department, board, or individual responsible for the administration of the plumbing codes of the undermentioned cities.

Department of Health:	**Department of Buildings:**
Allegheny, Pa.*	Boston, Mass.
Baltimore, Md.	Cincinnati, O.
Buffalo, N. Y.	Columbus, O.
Chicago, Ill.	Kansas City, Mo.
Denver, Colo.	Minneapolis, Minn.
Detroit, Mich.	New York, N. Y.
Fall River, Mass.	Omaha, Neb.
Indianapolis, Ind.	Toledo, O.
Jersey City, N. J.	**Department or Board of Public Works or Public Improvements:**
Newark, N. J.	Louisville, Ky.
New Haven, Conn.	Milwaukee, Wis.
Paterson, N. J.	St. Louis, Mo.
Philadelphia, Pa.	St. Paul, Minn.
Pittsburg, Pa.*	**Engineer Commissioner:**
Rochester, N. Y.†	Washington, D. C.
San Francisco, Cal.	**Plumbing Inspector:**
Scranton, Pa.*	Providence, R. I.†
Syracuse, N. Y.	St. Joseph, Mo.
Worcester, Mass.	**Sewerage and Water Board:**
	New Orleans, La.

*In co-operation with the Department of Public Safety.
†In co-operation with the Department of Public Works.

Before passing to the consideration of the codes from the standpoints indicated, it may be stated that, in several of the codes, it is difficult to locate a section relating to a particular subject, and it is suggested that the use of headings at the top or side of each section would be a great help to those who have to refer to them, and, incidentally, add greatly to the appearance of the codes.

Administrative Body.

The object of all legislation for the regulation of plumbers' work being the protection of the public health, the administration of such laws should, very properly, be vested in the Department of Health of each city.

Where properly carried out, the real work of administration will devolve upon some person qualified in plumbing or sanitary engineering, and there are no apparent reasons why such person could not act under the supervision of the Department of Health, just as well as under the supervision of an Inspector of Buildings, or a Commissioner of Public Safety or Public Works.

There are very many of the smaller cities in which there is no active supervision over the construction of buildings; and in many cities where the regulation of plumbers' work is vested in the Department of Buildings, the approval of plans for and the supervision of such work will, usually, be left entirely with the chief of the Bureau or Division of Plumbing.

A very important reason why the control of plumbers' work should be vested in the Department of Health is that very many of the complaints which reach this Department, in cities, have reference to defective house sewerage, necessitating the employment of an inspector, or inspectors, versed in such work; and, under these conditions, the employment of another staff of inspectors, acting under the jurisdiction of some other department, for the control of plumbers' work in new buildings, would scarcely seem politic.

To what extent the administration of the plumbing codes under consideration is vested in the health and other departments and boards, may be seen by reference to Exhibit I.

Examination, Licensing and Registration of Plumbers.

One of the most important provisions in a plumbing code is that which requires a plumber to produce evidence of his knowledge of plumbers' work in general, and of the principles underlying the sanitary sewerage of buildings in particular, before he is permitted to engage in this work, and yet there are many codes which do not contain such a provision.

Of the thirty-five codes under consideration but twenty-three contain a provision for the examination of plumbers. In twenty of these, provision is made for special boards of examiners, usually consisting of the Inspector of Plumbing, the Health Officer and one or more practical plumbers; in two, the power of examination is vested in the board of health; and in one, apparently in the Supervisor of Plumbing.

In thirteen codes, the examination applies to both employing and journeymen plumbers; and in ten, to employing plumbers only.

In seven codes, the examination of one member of a firm or corporation is deemed sufficient.

Of the twelve codes which do not provide for an educational test of the fitness, or otherwise, of any person to engage in the business or work of master or journeyman plumber, eleven require that plumbers shall simply register their names and business addresses with, be licensed by, or obtain a per-

mit from, a particular department of the city government; and one contains no conditions whatever.

A summary of the provisions of the several codes relative to the qualifications of employing and journeymen plumbers may be found in Exhibit II.

Examination of Plans and Specifications of Proposed Work.

The importance of this branch of administrative work is indicated by the fact that thirty-four of the thirty-five codes under consideration contain some requirement relative to the submission, to the department having jurisdiction over plumbing work, of plans or specifications of all proposed new work, and of certain alterations in old work.

Of the thirty-four codes which require the submission of plans or specifications, as above, thirty-two contain a provision for the filing of the originals or copies of the same.

Apparently for the purpose of securing uniformity in filing, eight of the codes require that specifications, and eight that both plans and specifications shall be made on blanks furnished or ordered by the department having jurisdiction.

EXHIBIT II.—The conditions under which a person, firm or corporation may engage in the work or business of plumbing in the undermentioned cities.

CITY.	EDUCATIONAL TEST CONDUCTED BY:	REGISTRATION WITH:	LICENSE FROM.
Allegheny, Pa.*, §....	Health Officer or Superintendent of the Board of Health, two plumbers, Inspector of Plumbing.	Bureau of Health.	Department of Public Safety.
Baltimore, Md.*.....	State Board of Commissioners of Practical Plumbing.	Health Department.	.....
Boston, Mass.†.....	(No examination provided for in codes.)	Building Commissioner.	.....
Buffalo, N. Y.†.....	Two master and one journeyman plumbers, City Engineer, Inspector of Plumbing.	Board of Health.	.....
Chicago, Ill.*.....	Commissioner of Health, one master plumber, one journeyman plumber.	.....	.....
Cincinnati, O.....	(No examination provided for in code.)	.....	.....
Columbus, O.	(No examination required at present time.)	.....	.....
Denver, Colo.*.....	"Examining Board of Plumbers."	.....	.....
Detroit, Mich.*.....	One master and one journeyman plumber, Health Officer, Sanitary Engineer, City Engineer.	Board of Health.	.....
Fall River, Mass.*, §..	Member Board of Health, one plumber, Inspector of Buildings.	Board of Health.	.....
Indianapolis, Ind.†, §.	Inspector of Plumbing, two plumbers.	.....	City Comptroller.
Jersey City, N. J.†...	"Examining and Licensing Committee of Board of Street and Water Com'nrs."	Board of Health.	.....
Kansas City, Mo.†...	One architect, Inspector of Plumbing, Supt. of Buildings.	.....	Inspector of Plumbing.
Louisville, Ky.*.....	Inspector of Plumbing, two master plumbers, two journeymen plumbers.	.....	.....
Milwaukee, Wis.†....	(No examination provided for in code.)	.....	Board of Public Works, subject to approval of Plumbing Inspector.
Minneapolis, Minn.†..	(No examination provided for in code.)	.....	City Council.
Newark, N. J.†.....	(No examination provided for in code.)	Board of Health.	.....
New Haven, Conn.†...	Board of Health.	Board of Health.	Board of Health and Board of Public Works.
New Orleans, La.†, §	(No examination provided for in code.)	.....	Sewerage and Water Board.
New York, N. Y.†....	Two master and one journeyman plumbers, Chief Engineer of Sewers, Inspector of Plumbing.	Bureau of Buildings.	.....
Omaha, Neb.†.....	(No examination provided for in code.)	Building Inspector.	.....
Paterson, N. J.‡.....	(No examination provided for in code.)	Board of Health.	.....
Philadelphia, Pa.†....	(No examination provided for in code.)	Board of Health.	.....
Pittsburg, Pa.*, §....	Health Officer, Inspector of Plumbing, two plumbers.	Board of Health.	Department of Public Safety.
Providence, R. I.†....	(No examination provided for in code.)	.....	Commissioner of Public Works, upon recommendation of Plumbing Inspector.
Rochester, N. Y.†....	"Examining Board of Plumbers."	Board of Health.	Commissioner of Public Works.
St. Joseph, Mo.*.....	Inspector of Plumbing, one master and one journeyman plumber.	.....	Board for the Examination of Plumbers.
St. Louis, Mo.*.....	Supervisor of Plumbing. (?)	Board of Public Improvements.	.....
St. Paul, Minn.†.....	"State Board of Commissioners of Practical Plumbers."	Commissioner of Public Works.	Commissioner of Public Works.
San Francisco, Cal*..	Board of Health.	Board of Health.	.....
Scranton, Pa.*, §.....	Health Officer, Inspector of Plumbing, two plumbers.	Board of Health.	Department of Public Safety.
Syracuse, N. Y.†.....	"Examining Board of Plumbers."	Board of Health.	.....
Toledo, O.†.....	(No examination provided for in code.)	Department of Building Inspection.	.....
Washington, D. C.†, §	Two master, one journeyman plumbers, two employes of the District of Columbia having knowledge of plumbing.	Inspector of Plumbing.	.....
Worcester, Mass.*, §..	One member of Board of Health, Inspector of Buildings, one plumber.	.....	Board of Health.

‡ Applies to master and foreman plumber.
* Applies to master and journeyman plumber.
† Applies to master plumber only.
§ Required of one member of a firm or corporation, only.

The principal benefits conferred by these requirements may be stated, briefly, as follows:

They enable the department having jurisdiction over plumbing work to prevent the construction of work not in accord with certain recognized or stipulated standards.

The plans furnish to plumbers a guide in the execution of their work, and minimize the possibility of loss to them by reason of alterations in work already completed which might not be approved by the Inspector.

be exercised in the selection of materials and in the execution of the work, defective materials and imperfect joints may always be anticipated. For these reasons, the systematic and thorough inspection and testing of all work is imperative and should be provided for in every plumbing code. To what extent such provision is made in the codes under consideration may be seen by reference to Exhibit IV. It will be seen that, in every code, provision is made for inspection of all work, and that, with but one exception, notification is required

EXHIBIT III.—Requirements relative to the submission, for approval, of plans and specifications.

CITY.	PLANS TO BE APPROVED.	SPECIFICATIONS TO BE APPROVED.	PLANS OR SPECIFICATIONS TO BE FILED.	TO BE SUBMITTED ON BLANKS FURNISHED OR ORDERED BY THE DEPARTMENT HAVING JURISDICTION.
Allegheny, Pa.	Yes.	Yes.	Yes.	Plans and Specifications.
Baltimore, Md.	Yes.	Not stated.	Yes.	Not stated.
Boston, Mass.	When required by Building Commissioner.	Not stated.	When required.	Not stated.
Buffalo, N. Y.	Yes.	Yes.	Yes.	Specifications.
Chicago, Ill.	Yes.	No.	Yes.	No.
Cincinnati, O.	Yes.	Yes.	No.	Not stated.
Columbus, O.	Yes.	Yes.	Yes.	Plans and Specifications.
Denver, Colo.	Not stated.	Yes.	Yes.	Specifications.
Detroit, Mich.	Yes.	Yes.	Yes.	Not stated.
Fall River, Mass.	Yes.	Yes.	Yes.	Plans and Specifications.
Indianapolis, Ind.	Not stated.	Not stated.	.....	.....
Jersey City, N. J.	Yes.	Yes.	Yes.	Not stated.
Kansas City, Mo.	No.	Yes.	Yes.	Not stated.
Louisville, Ky.	"Plan or Abstract."		Yes.	Not stated.
Milwaukee, Wis.	Yes.	Yes.	Yes.	Not stated.
Minneapolis, Minn.	Not stated.	Yes.	Yes.	Not stated.
Newark, N. J.	Yes.	Yes.	Yes.	Not stated.
New Haven, Conn.	When required.	Yes.	Yes.	Specifications.
New Orleans, La.	Yes.	Yes.	Yes.	Plans and Specifications.
New York, N. Y.	Yes.	Yes.	Yes.	Specifications.
Omaha, Neb.	Not stated.	Yes.	Yes.	Specifications.
Paterson, N. J.	Yes.	Yes.	Yes	Specifications.
Philadelphia, Pa.	Yes.	Yes.	Yes.	Plans and Specifications.
Pittsburg, Pa.	Yes.	Yes.	Yes.	Plans and Specifications.
Providence, R. I.	Not stated.	Yes.	Yes.	Specifications.
Rochester, N. Y.	Yes.	Yes.	Not stated.	Not stated.
St. Joseph, Mo.	Not stated.	Yes.	Yes.	Specifications.
St. Louis, Mo.	Yes.	Not stated.	Yes.	Not stated.
St. Paul, Minn.	Yes.	Yes.	Until completion of work.	Not stated.
" "	.....	.....	For three years.	No.
San Francisco, Cal.	Yes.	Yes.	Yes.	Plans and Specifications
Scranton, Pa.	Yes.	Yes.	Yes.	Not stated.
Syracuse, N. Y.	Yes.	Yes.	Yes.	Not stated.
Toledo, O.	Yes.	Yes.	Yes.	No.
Washington, D. C.	Yes.	Yes.	Yes.	Plans and Specifications.
Worcester, Mass.	Yes.			

The property owner is protected against subsequent loss, and probable danger, from badly planned work.

Where properly filed, the plans and specifications furnish a valuable record of the sewerage of buildings in a locality.

To what extent the various codes require the submission, for approval and filing, of plans and specifications may be seen by Exhibit III.

Inspection and Testing of Work.

Notwithstanding that the sewerage of a building may be properly planned, and the plans approved by the department having jurisdiction over such work, in the absence of official inspection, the work will not always be executed in strict accordance with the plans; and although the greatest care may

when the work is ready for inspection. It will also be seen that, with but one exception, provision is made for some form of test of the work, but that there is a wide difference in the manner of making the tests.

Testing of Outside Sewers.

One of most noticeable omissions in the codes is the lack of specific directions for the making of a test of that portion of the sewer which is outside of the building—usually constructed of earthenware pipes, and frequently laid by men who know little, or nothing, concerning the scientific principles of sewerage or of the probable results of their inefficiency or carelessness. As this part of the work will often be constructed and covered in before the plumber has completed the roughing-

EXHIBIT IV.—Inspection and Testing of work.

CITY.	INSPECTION.		NATURE OF TESTS.		
	Provided for in Code.	Notice required when work is ready for	Preliminary.	Final.	During Unfavorable Weather Conditions.
Allegheny, Pa. ...	Yes.	Yes.	Water or air pressure.	Air pressure or peppermint.	No provision for.
Baltimore, Md. ...	Yes.	Yes.	Apparently water or smoke.	Apparently peppermint, or smoke.	No provision for.
Boston, Mass.	Yes.	Yes.	Water or air pressure, when practicable.	No provision for.	No provision for.
Buffalo, N. Y.	Yes.	Yes.	Water or air pressure.	No apparent provision for.	No provision for.
Chicago, Ill.	Yes.	Yes.	Water, or air pressure equal to ten inches of mercury. Tile drains **under** building to be tested with water under head of at least two ft.	Smoke, under pressure of one inch of water; or peppermint—five ounces oil of peppermint for first five stories and one ounce for each additional five stories or fraction thereof.	No provision for.
Cincinnati, O.	Yes.	Yes.	Water pressure for joints of all pipes.	No provision for.	No provision for.
Columbus, O.	Yes.	Yes.	Water, or air pressure equal to twenty inches of mercury. Stacks over seventy-five feet high to be air tested, as above.	Smoke; or peppermint—two ounces of oil of peppermint for each fifty feet of pipe-stack.	When in danger of freezing, air test shall be used, as in **preliminary test.**
Denver, Colo.	Yes.	Not stated.	Water, or air pressure of ten pounds.	No provision for.	No provision for.
Detroit, Mich. ...	Yes.	Yes.	Water for first four stories; smoke above that point.	Smoke, if deemed necessary.	No provision for.
Fall River, Mass.	Yes.	Yes.	Water, or other approved method.	No apparent provision for.	No provision for.
Indianapolis, Ind.	Yes.	Yes.	Air or water, not less than ten pounds pressure.	No apparent provision for.	No provision for.
Jersey City, N. J.	Yes.	Yes.	For main drain **inside** the building, water, under head of at least six feet; for roughing-in, water.	Smoke, under pressure; or peppermint—two ounces of **essence** of peppermint for each pail of water.	In severe cold weather, air pressure equal to twenty inches of mercury may be used.
Kansas City, Mo.	Yes.	Yes.	For main drain **inside** the building, water, under head of at least six feet; for roughing-in, water or air pressure of ten pounds.	No apparent provision for.	No provision for.
Louisville, Ky. ...	Yes.	Yes.	For main drain **inside** the building, water, under head of at least six feet; for roughing-in, water.	Smoke, as directed.	No provision for.
Milwaukee, Wis. .	Yes.	Yes.	For house sewer, water under head of at least two feet; for roughing-in, water, or air pressure of twenty-five pounds.	No apparent provision for.	No provision for.
Minneapolis, Minn.	Yes.	Yes.	Water, or air pressure of five pounds.	Test equal to pressure of one inch of water.	No provision for.
Newark, N. J.	Yes.	Yes.	Smoke, water, air, or peppermint.	No apparent provision for.	No provision for.
New Haven, Conn.	Yes.	Yes.	Earthenware pipes inside building to be tested with water to grade; roughing-in with water, or air pressure of not less than five pounds.	No apparent provision for.	Air test when weather is unfavorable.
New Orleans, La.	Yes.	Yes.	Terra-cotta pipe to be tested by passing ball through them one-half inch less diameter than pipe; roughing-in by water.	Smoke, or pressure peppermint.	No provision for.
New York, N. Y. .	Yes.	Yes.	For main drain **inside** the building, water under head of at least six feet; for roughing-in, water, or air of ten pounds pressure, equal to twenty inches of mercury.	Smoke.	No provision for.
Omaha, Neb.	Yes.	Yes.	Water, or air pressure of not less than ten pounds.	No apparent provision for.	No provision for.
Paterson, N. J. ...	Yes.	Yes.	Smoke, water, or air.	No apparent provision for.	No provision for.
Philadelphia, Pa. .	Yes.	Yes.	For horizontal drains **inside** building, air of not less than three pounds pressure, or water under head of at least six feet; for roughing-in, air test as above.	Not clear. Smoke or peppermint test to be applied to drainage system when deemed necessary. Two ounces of oil of peppermint for first five stories and one ounce for each additional five stories or fraction thereof.	No provision for.
Pittsburg, Pa. ...	Yes.	Yes.	Water or air.	Air or peppermint.	No provision for.
Providence, R. I. .	Yes.	Yes.	Water, air, peppermint, or other reliable test.	Not clear.	No apparent provision for.
Rochester, N. Y. .	Yes.	Yes.	House sewers less than three feet from cellar walls to be tested by water, roughing-in by water, or smoke when water is not available.	Not clear; smoke test may be required of all work.	Smoke test when there is danger of freezing.
St. Joseph, Mo. ..	Yes.	Yes.	Water, or air of not less than five pounds pressure.	Test equal to pressure of one inch of water.	No provision for.
St. Louis, Mo.	Yes.	Yes.	No apparent provision for.	No apparent provision for.	No provision for.
St. Paul, Minn. ..	Yes.	Yes.	Air of ten pounds pressure.	No apparent provision for.	No provision for.
San Francisco, Cal	Yes.	Yes.	For "Ironstone" pipes, water or other test may be demanded; for roughing-in, water test.	Not clear—smoke or peppermint test to be made whenever demanded.	No apparent provision for.
Scranton, Pa.	Yes.	Yes.	Water or air.	Air or peppermint.	No provision for.
Syracuse, N. Y. ..	Yes.	Yes.	For house sewer, house drain, and plumbing, water; but when water is not available, or in sufficient quantity, smoke or air of not less than ten pounds pressure.	Smoke or peppermint.	No provision for.
Toledo, O.	Yes.	Yes.	For main drain **inside** the building, water under head of at least to cellar floor; for roughing-in, water test.	No apparent provision for.	In freezing weather, air test, equal to at least ten inches of mercury.
Washington, D. C.	Yes.	Yes	For horizontal drains **inside** building, water under head of at least five feet; for roughing-in, air of not less than three pounds pressure.	Peppermint or smoke.	No provision for.
Worcester, Mass.	Yes.	Yes.	Water.	Peppermint, or other practical test.	No provision for.

in, it is imperative that provision be made for a separate test of the outside sewer. This provision has been definitely made in but one of the thirty-five codes, in which water, under a head of two feet, is specified as a test. In one of the codes, a water test is to be applied when the house sewer is less than three feet from the cellar wall; in another code, a water or other test may be demanded for "ironstone" pipes. In still another code, "terra-cotta" pipes are to be tested by passing a ball through them one-half inch less diameter than the pipes.

PRELIMINARY OR ROUGHING-IN TEST.

The importance of this test is indicated by the fact that provision is made for the same in all but one of the codes, and in all but two water under pressure—usually obtained by the filling of the pipes with water to the highest point of, or, in the case of tall buildings, to a designated height in, the vertical stacks—is specified as the method of testing.

In fifteen codes, air pressure, ranging from three to twenty-five pounds, and in eight codes, air, of no specified pressure, may be used in place of the water test.

In three codes, smoke may be used instead of water; in another code, for the plumbing above the fourth floor; and in two codes, when water is not available, or in sufficient quantity.

In two codes, peppermint, the amount of which is not stated, may be used for this test.

FINAL TEST.

The importance of this test is no whit less than in the case of the preliminary test, and yet, in fifteen of the codes, no apparent provision is made for a final test; in five, the provision for such test is not clear; and in one, the provision is made for a smoke test if deemed necessary.

In those codes which provide, or apparently provide, for a final test, the choice of tests seems to be about equally divided between smoke and peppermint; and in three instances, air, of no stated pressure, is specified.

In using the smoke test, it is usual to specify that the smoke shall be forced into the system of pipes under a pressure of one inch of water, but this has been in but three of the fourteen codes in which smoke is apparently designated as the test.

In using peppermint as a test, it is usual to specify *oil* of peppermint, in quantity varying from two to five ounces, according to the amount of work to be tested, but the kind of peppermint is specified in but four of the codes in which peppermint is designated as a test, and in one of these, *essence* of peppermint—an absolutely worthless substance for the purpose—is specified. The amount of peppermint to be used is specified in but four instances, and in each of these, the quantity varies very considerably. Thus, in Chicago, five ounces is considered necessary for testing the plumbing of the first five floors, while in Philadelphia, two ounces is deemed sufficient for the same amount of work to be tested.

PROVISION FOR TESTS DURING UNFAVORABLE CONDITIONS OF THE WEATHER.

In localities where freezing temperatures prevail during the winter season, it is not always practicable to use the water test, and yet, in but five of the codes in which water is specified as a test, is any special mention made of the use of air or smoke during the freezing weather. In Chicago, as air or water test is permitted, it is inferred that in very cold weather air will be used.

In all climates, the use of water as a test during very warm weather, particularly when the relative humidity might be high, would be attended with considerable difficulty by reason of the condensation of moisture on the outside of the pipes, and yet no special mention is made in any of the codes relative to the use of air pressure, or smoke, during such conditions of the weather.

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Running Branches

By "Phoenix."

One of the most aggravating tasks of "slinging in" the piping on either a steam or hot water job, is running the branches.

Probably more time is lost at this point, in direct proportion to the job, than at any other portion of the work.

Many times the ell on the end of the branch comes on top of the cellar wall, or even against the timbers in such a way as to make it nearly impossible to catch the branch in the ell rising from the main, or into the tee direct as would be done in certain parts of hot water heating.

In such inconvenient and close places as this, it is far easier, quicker and cheaper to make the branch in two pieces connected with a union.

Some fitters who count themselves as mighty good men, frequently begin at the radiator and drop all risers through to the basement the very first thing. Then they next run the main, taking care to put all the short nipples and ells in the tees along the main, and leave them "set" properly. Then all the measures for all the branches are taken and they are put in with unions. It is best to look the job over carefully and see just where it would be easier and cheaper to use the unions and then do it. Some people think nothing of working two hours to save using an extra

fitting and **squander three times as much in wages as the fitting would cost,** and half the time end up by tearing out the branch and using the union, after all. This is where many, many dollars of profit for the shop disappear each year.

Where the branches are only five or six feet long, the fitter and helper can each take a certain number alone to make up and thus **push the work along.**

In working after the manner of the general practice—viz., main first, branches second and risers last—after the branches are run it is a good plan if your radiators and valves are on the job to make the tail pieces of the valves into the radiator.

Generally these tail pieces are screwed into bushings which come with the radiator and in order to do a good job which will not leak, it is necessary to remove the bushings, clean out the chips and sand thoroughly, put in some **oil only,** and then make it all up tight. One man alone can do this, on any radiator of 80 square feet or under.

Lay a couple of 2x4's about six feet long on the floor and tip the radiator over upon them, on its side. Then you are in position to handle the bushings and plugged end of the radiator properly (in case it's a

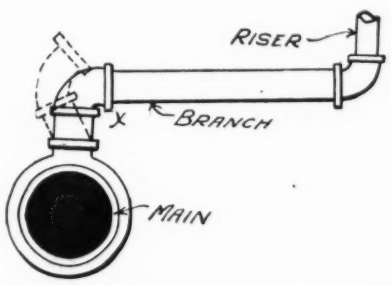


Fig. 13. Showing general manner of taking off a steam branch from main to riser.

one-pipe job). After making the radiators all secure in this manner, move them to their **exact place,** and you have a simple end to end measure **from the bottom of each valve to the face of the up-looking ell in the cellar.**

The fitter, on the measuring end can be in the rooms above, and the helper can be in the cellar holding the other end of the tape on the faces of the ells.

There is no chance for a mistake and every riser can be measured accurately. This applies to where the riser is in a direct vertical shoot from the cellar up.

Where offsets must be taken the measure can be taken to the ell where the offset begins, and these various offsets can be made up later following the same general plan.

The less fittings which can be used in delivering the steam or water from main to radiator, the better for all concerned.

A decade ago, everybody went foolish upon the subject of expansion and **about every pipe over ten feet in length had to be coupled up so** that "the expansion would be properly taken care of." Some country architects have not got the effects of the craze out of their system to this day.

As a matter of fact, the way mains, branches and risers are generally run on house heating jobs the expansion on any runs under 80 feet would cut no ice at all. The spring in the pipe or the fact that the holes in floors and ceilings are cut large enough for the pipes to pass through, would provide plenty of room for such expansion as would take place. I know that I am placing myself in a position to be criticized in making such a statement; but my statement applies to house heating, and small jobs only.

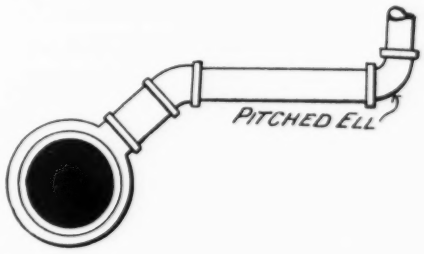


Fig. 14. Showing sensible connection for a steam branch on either one or two-pipe work.

Figure 13 represents a general manner of taking off a steam branch from main to riser.

The argument is that the dryest and hottest steam passes along the top of the main, and therefore this form of a "hook up" is most desirable.

As a matter of fact in nine cases out of ten the nipple and ell on top of the main must be thrown back (as shown by the dotted ell, which is exaggerated) in order to get a proper pitch on the branch; or else "drunk threads" cut on the branch and then look out for leaks. Another point against the "hook up" in Fig. 13 is the way the condensation (in a one pipe job) returns. The point inside the ell (marked X) acts like the brink of a waterfall and the return water pours over nearly filling the opening through which the steam must come to supply the radiator.

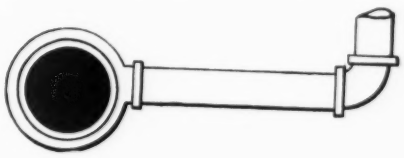


Fig. 15. Showing connection with minimum amount of fittings, but not recommended.

Let five pounds of steam into two cold radiators, one connected according to Fig. 13, and the other like unto Fig. 14, and observe which radiator works better and without kicking.

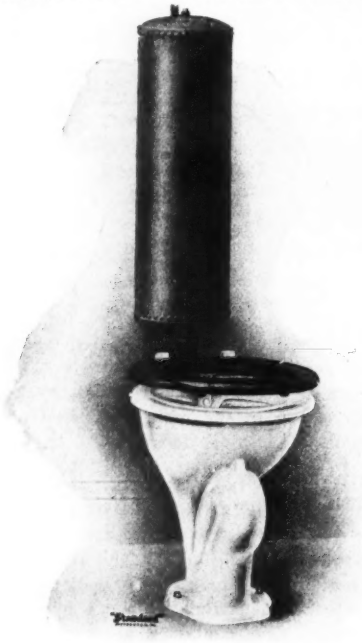
Figure 14 is the best and most sensible connection for a steam branch, on either one pipe or two pipe work. The pitched ell provides all the necessary fall required, **and gives a level face** in which **to catch the riser.** It is all right for expansion and swing and the

only way in which less fittings could be used would be to connect as in Fig. 15, which would be a risky thing to do in most cases and not expect water in the radiator.

Factory Sanitation.

By Thomas Tait, Mem. Am. Soc. Inspectors of Plumbing and Sanitary Engineers, Washington, Ind.

Several years ago the writer was called upon to install a toilet room for the use of the employes of a firm engaged in the manufacture of power boilers.



Type of water closet recommended for factory toilet rooms by Thomas Tait. It is D7441 from The Ahrens & Ott Mfg. Co.'s Catalogue.

The number of daily users averaged 125. The room is under the care of an attendant at all times. The building is of brick, 30 feet long, 20 feet wide, and 14 feet in height, with two Globe ventilators in the roof, and has a cement floor. The wood work throughout is painted with a good quality of waterproof paint, and the side walls are cement plastered to a height of 7 feet, thus permitting the free use of water in cleaning, which is done every evening after the men have left. The floor pitches to a deep floor sink which catches all dirt from the floor when scrubbed, and can be easily cleaned. All soil pipe is extra heavy and has clean outs at all points where necessary, for clearing stoppages.

The urinals have but one trap, and the waste pipe extends back of urinal stall to the opposite end where the city water is connected to it with necessary valve, thus permitting the waste to be thoroughly cleaned at any time.

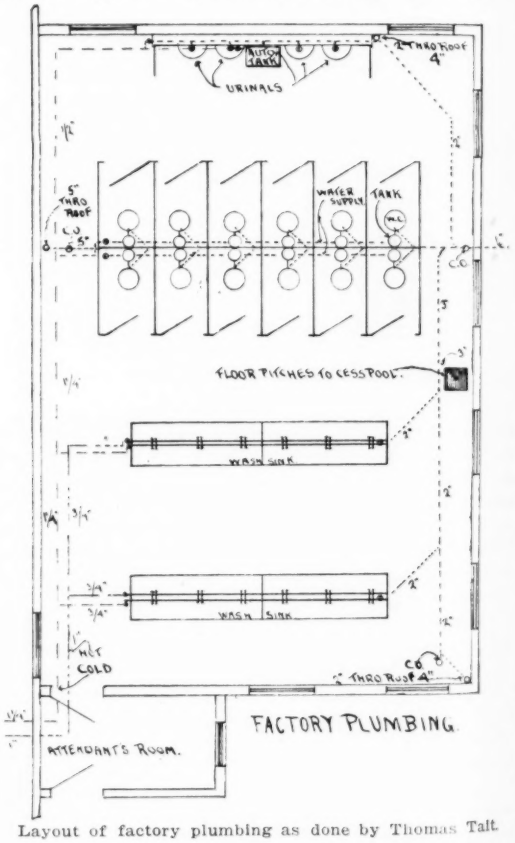
The stall is of galvanized iron, 6 feet from floor to top, but the bottom is one foot from floor to allow free access for cleaning purposes.

The closet stalls are of the same construction, have wood doors, water-proofed, as are also the closet seats. The urinals used were of the flat back, earthenware type, but I would use a urinal of the Ahrens & Ott Manufacturing Company, D 7496 type, if the installation were to be done at this time. This is an iron enameled iron urinal, and capable of standing the hard usage it might be subjected to. The urinals are flushed by an automatic flush tank.

The closets are seat operating type, with galvanized iron tanks, and earthenware bowls, but I would prefer the combination similar to that shown by Ahrens & Ott Manufacturing Company, D. 7441, which has an iron enameled bowl.

These closets are supplied through galvanized iron piping, underground, with a valve on each row of closets. Loose key valves are used on all supplies to prevent unauthorized parties from meddling with same.

The sinks are enameled inside and painted outside, set on standards, and are very similar to that shown by N. O. Nelson Manufacturing Company, 4145 N, and are supplied with hot and cold water and trapped.



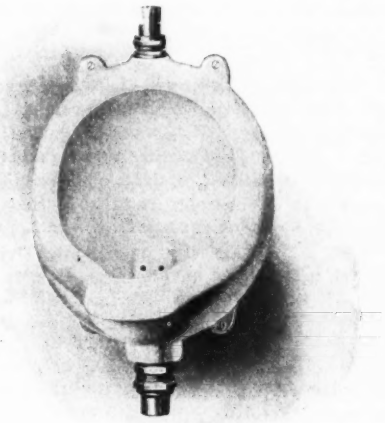
Layout of factory plumbing as done by Thomas Tait.

Attention is called to the simplicity of the venting as illustrated in the accompanying sketch. Several years of constant use has demonstrated that siphonage will not occur.

Perforated piping extending the full length of the sinks, was first used for supplying the water, but not

proving satisfactory, was replaced by compression faucets, which are entirely satisfactory.

The room is lighted by electricity and heated by exhaust steam, and a small radiator was placed at each Globe ventilator in the room to assist the ventilation,



Type of urinal recommended for use in factories by Thomas Tait. It is D7496 from The Ahrens & Ott Mfg. Co.'s Catalogue.

which proved to be satisfactory, as when several of the closets were in use, there was no perceptible odor. This description, together with the sketch, illustrates a perfectly sanitary and up-to-date toilet room, at a moderate cost, for use where there is much dirt and hard usage to contend with, and with some minor modifications, is applicable to practically any type of building.

Questions and Answers

This Department is maintained for the use of every reader of "Domestic Engineering." We solicit problems from you and will give them our best attention. In stating your questions please give all of the facts as clearly as possible and when necessary accompany your question with a correct layout of the job.

BOILER ON SAME LEVEL WITH RADIATORS.

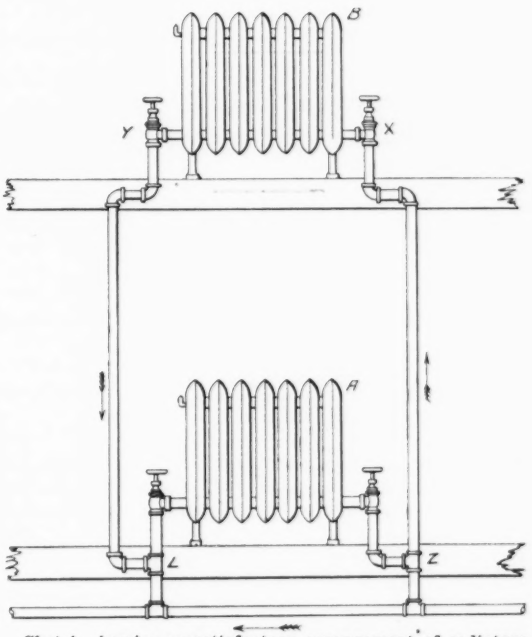
159. **South Haven, Mich.**—To the Editor of "Domestic Engineering." Sir: Will a hot water plant work all right if the boiler is on the same level with the radiators and run all piping below? **P. C. A.**

It depends upon circumstances. If it is intended to drop the supply pipes below the floor and then rise to the radiators, we should say that no natural circulation would do this. If it was absolutely necessary to install the mains in such a manner we would recommend the use of one of the many different pressure devices advertised every week in our columns, which would put a pressure of some ten pounds upon the job and force a circulation, in the line of radiators.

Or it would be necessary to practically raise steam in the flow pipe, or in other words, put the system under pressure similar to the railway car heating systems. We would refer as an example to the Baker system of car heating. It would, however, be bad policy to install a high pressure system of this kind in a residence, as there may be danger of breakage. What should be done if possible is to excavate for the boiler so as to obtain the proper pitch in the piping.

WHY DOES THE UPPER RADIATOR HEAT FIRST?

152 **Wilmington, Del.**—To the Editor of "Domestic Engineering." Sir: I desire to know why the radiators in sketch enclosed do not work properly. Radiator B is in the second story and always heats sooner



Sketch showing unsatisfactory arrangement of radiators.

than radiator A, and is also much hotter. The room in which radiator A is, is never comfortable in our coldest weather. How can this matter be remedied? **G. A.**

The radiator B, as shown in sketch, is connected in such a manner as to rob the first floor radiator A. The tendency of hot water is to rise along the lines of least resistance and some means must be taken in your case to prevent the too easy flow of the water to radiator B and force it into radiator A. Probably the most simple and least expensive method is to "smother" the top radiator. This can be done by drawing the water in the system until you can disconnect the valves of radiator B. Now into the tail pieces of the supply and return pipes put short pieces of pipe about an inch long. Then connect the radiator as before. This will act as a brushing and reduce the amount of water which can flow to B and will favor radiator A. Another, but much more expensive, manner in which this job can be made to work would be to pull out the pipes on both radiators and at the points L and Z put in divided tees.

STANDARD SANITARY WINS SUIT IN CANADA

National Association of Brass Manufacturers at meeting in Buffalo decides on Sept. 1, 1909, as date on which New Lists go in Force

Modern Science Club in favor of Standard Rating for Heating Boilers

CLAIMED FRAUD IN USE OF NAME.

An important judgment was rendered Saturday, May 15, by Hon. Mr. Justice Archibald at Montreal, Quebec, in a trade-mark and trade-name case. The Standard Sanitary Manufacturing Company has been doing business in the United States and Canada under the trade-name of "Standard" ever since the year 1890. In 1904 the Standard Ideal Company was incorporated in the Province of Ontario to do business along the same lines as the Standard Sanitary Company, and began using labels, advertising material and catalogues extremely similar to those used by the latter company. The Standard Manufacturing Company alleged and proved that the opposite party had assumed the name "Standard" in order to take advantage of the reputation of the plaintiff's ware and of passing off other ware as being "Standard." It was proved that the manager of the Standard Ideal Company was fully aware of the plaintiff's business in Canada when he selected the name for his company. Two letters were exhibited asking the trade-mark people to make their label in the precise shape and shade of coloring as the Standard Manufacturing Company's labels. Also the Standard Ideal Company's catalogue had been made in its essentials from photographs taken directly from the catalogue of the other company. The plaintiff demanded that the Standard Ideal Company should be prohibited from the use of word "Standard" in any matter regarding the sale of goods, labels, advertisements or anything to do with trade. The judge held that the use of the word "Standard" by the Standard Ideal Company was of a nature to deceive the public into the belief that the goods were those of the Standard Manufacturing Company, and he granted the injunction asked.

BRASS MEN HOLD GOOD MEETING.

The National Association of Brass Manufacturers held a very successful meeting in Buffalo, N. Y., on Monday, Tuesday and Wednesday, May 17, 18 and 19, at which the report of the List Committee was adopted, and it was ordered printed in catalogue form and supplied to the jobbing trade as heretofore. The List Committee has been at work on this report nearly a year and it is said to be a most careful compilation. **The new lists will go into effect on September 1, 1909.** The association will hold its next meeting August 24 and 25, 1909, in Detroit, Mich.

STANDARD RATING FOR HEATING BOILERS.

An interesting discussion of house heating boiler ratings took place on Saturday evening, May 8, at the Modern Science Club-house, South Elliott place, Brooklyn, N. Y. The meeting was arranged by James A. Donnelly, secretary of the club. William J. Baldwin, engineer and author, and H. P. Seward, of the Model Heating Company, took a leading part in the discussion. Mr. Donnelly opened the meeting with references to the lines of difference between the power and house heating boiler. Mr. Baldwin was heartily in favor of the proposed plan for rating boilers as presented by Mr. Seward, i. e., the amount of coal that can be burned per hour per square foot of grate surface. It was the opinion of those present that the matter of a standard rating should be recommended by a non-commercial body. After the meeting those present retired to the basement of the club house, where refreshments were served.

COMPLETES NEW ADDITION.

The Iron City Sanitary Manufacturing Co., of Pittsburg, Pa., has recently completed an addition to its plant at Zelienople, Pa., which will be devoted exclusively to the manufacture of lavatories.

TRADE BALL GAME POSTPONED.

The games of the New York Plumbing and Steam Fitting Supply Baseball League scheduled for Saturday, May 22, were postponed on account of rain. Rain checks will be good for all season.

SECURES REPRESENTATIVES IN THE SOUTH.

Homestead Valve Manufacturing Company, of Pittsburgh, Pa., has appointed Woodward Wight & Company, of New Orleans, La., as representatives in that city and vicinity. A complete line of Homestead valves will be carried in stock by the southern firm.

MAKE LARGE SHIPMENT OF RADIATORS TO JAPAN.

The Pressed Radiator Company of America, of Pittsburg, has recently shipped to the Japanese government over 30,000 square feet of radiators to be used in the Marine Hospital, erected at Osaka, which is the largest hospital ever erected by the Japanese government.

TO BUILD NEW ADDITION.

The Wm. H. Page Boiler Company has arranged for the erection of an addition to its foundry at its plant at Meadville, Pa., that will increase its capacity one-third and an addition to its store house one hundred feet long that will double its present capacity. It is also erecting a large store house in Norwich, Conn.

NOW LOCATED IN ITS NEW PLANT.

The Hughson Steam Specialty Company is now nicely located in its two-story factory building, 40x150 feet, at 5021-5023 State street, Chicago. This new plant is equipped throughout with the most modern and up-to-date machinery, with which the company expects to increase its output materially besides adding some new specialties to its line in the near future.

H. MUELLER MOVES CHICAGO BRANCH.

H. Mueller Manufacturing Company, of Decatur, Ill., announces the opening of a branch at 37 Dearborn street, Chicago, where a stock of Mueller plumbing, water and gas goods will be carried. This new location is diagonally across the street from the old one which was opened about a year ago. M. T. Whitney is sales manager and F. L. Hays, Jr., office manager of this branch.

TO CONFINE HIS ACTIVITY TO THE ENAMELED STEEL TANK COMPANY.

Carl H. Zwermann, who has been connected with the Michigan Enameling Works, of Kalamazoo, Michigan, for the past five years, has retired from the active management of this company, and sold his interest to John Peil, of Columbus, Ohio, who is now general manager of the Michigan Enameling Works. Mr. Zwermann will hereafter devote his entire time to the management of the Enameled Steel Tank Company, of Kalamazoo, Mich., of which he is president and general manager.

CHICAGO STEAM TRADES' BALL GAME.

The Chicago Master Steam Fitters' Association has challenged the Boiler and Radiator Salesmen's Baseball Association of Chicago to play a game of baseball at Ravinia Park, near Chicago, about the middle of June. The challenge has been accepted and the exact day of the match and other details will be announced next week. To those who remember last year's event at Ravinia Park with its Al Fresco setting, Damrosch concert after the game and banquet in the evening, this year's festival is looked forward to with pleasurable anticipation.

HEATING ENGINEERS' SUMMER MEETING ARRANGED.

Secretary W. M. Mackay, of the American Society of Heating and Ventilating Engineers, has issued a letter to the members regarding hotel accommodations at the semi-annual meeting to be held at Indianapolis, Ind., July 15 and 16. The meeting will be held at the Claypool Hotel with sessions at 10 a. m. and 2 p. m. The Claypool Hotel has made a special rate to members and others attending the meeting of $2 per day and upward on the European plan, and $3 per day and upward on the American plan, with a reduction of 50 cents per day each where two persons occupy the same room. The secretary has also issued a ballot containing names of thirty-six applicants for membership; the largest ballot in point of numbers in the annals of the society. This is over ten per cent of the present membership. The Committee on Tests by J. D. Hoffman is urging the members to co-operate with them in securing material for their report to be made at this summer meeting.

CLOSING SESSIONS OF SUPPLY & MACHINERY MANUFACTURERS' AND JOBBERS' CONVENTION AT PITTSBURG

Characterized by Important Business and Pleasant Incidents.

Note.—The closing sessions of this convention at the Fort Pitt Hotel in Pittsburgh were held so late on Friday, May 14, that it was impossible to report them in our issue of May 15, and as last week's issue was a special number devoted exclusively to the subject of "Public Baths" and containing no news whatever, this is the first opportunity we have of recording these proceedings.—**Editor.**

Pittsburgh, Pa.—The closing sessions of the great joint -convention of the American Supply & Machinery Manufacturers' Association and the National Supply & Machinery Dealers' Association were the scenes of both important business transactions and pleasing incidents.

The American Supply & Machinery Manufacturers' Association elected the following executive committee: S. P. Browning, of the Ohio Valley Pulley Works, Maysville, Ky.; **E. Bertram Pike,** of Pike Manufacturing Company, Pike, N. H.; **E. H. Hargraves,** of Cincinnati Tool Company, Cincinnati, O.; **C. A. Hubbel,** of T. R. Almond Manufacturing Company, North Ashburnham, Mass. and **Dugal Roberts,** of the Roberts Brass Manufacturing Company, Detroit, Mich.

The National Supply & Machinery Dealers' Association elected an executive committee composed of: Henry Prentiss, of the Prentiss Tool & Supply Company, New York; **Chas. S. Farquahar,** of Chandler & Farquahar Company, Boston ,Mass. and **O. T. Webb,** of the O. L. Packard Machinery Company, Milwaukee, Wis.

Its advisory board is composed of Ex-presidents **E. E. Strong,** of Strong, Carlisle & Hammond Company, Cleveland, O.; **George Puchta,** of the Queen City Supply Company, Cincinnati, O. and **Frederick B. Scott,** of the Syracuse Supply Company, Syracuse, N. Y.

Resolutions.

The following resolutions were **presented to the National Supply & Machinery Dealers' Association by the American Supply & Machinery Manufacturers' Association and adopted by the first named body.**

"We endorse the Declaration of Principles adopted by the American Supply & Machinery Manufacturers' Association and will do everything in our power to further, by support of our members, those principles and give our preference at all times in our purchases to the manufacturers who are members of the American Supply & Machinery Manufacturers' Association.

Resolved, That any material complaint made against any member of our association, whether on prices or other trade matters, shall be made by the secretary of the National Supply & Machinery Dealers' Association, to our grievance committee and on investigation by such committee, with the aid of members complained of, be instituted and a report of such committee be submitted to the executive committee of the National Supply Dealers' Association and passed upon by them before placing before the lay members of the above named association."

Similar Resolutions were adopted by the Southern Supply & Machinery Dealers' Association at Chattanooga.

A magnificent silver loving cup was presented to retiring president Chas. F. Aaron by the members of the American Supply & Machinery Manufacturers' Association, as an expression of their good-will toward him and a recognition of his distinguished services to the association during his incumbency of its highest office.

In his brief, but pointed and feeling speech of presentation, J. H. Drury, of Athol, paid high tribute to the conscientiousness and unselfishness that had characterized Mr. Aaron's term as presiding officer, and likewise to the good work that had been accomplished by, and for, the association during that period.

George Puchta, retiring president of the National Supply & Machinery Dealers' Association, was similarly honored by his fellow members, when E. E. Strong of Cleveland on their behalf presented him with a handsome bronze bust of Beethoven, in like recognition of his intrinsic worth and his untiring efforts in advancing the interests of his association during the past year.

E. W. Barnes.

PERSONAL MENTION

W. E. Barnes, manager of the Thermograde Valve Company, of Boston, was in Chicago this week calling on the trade.

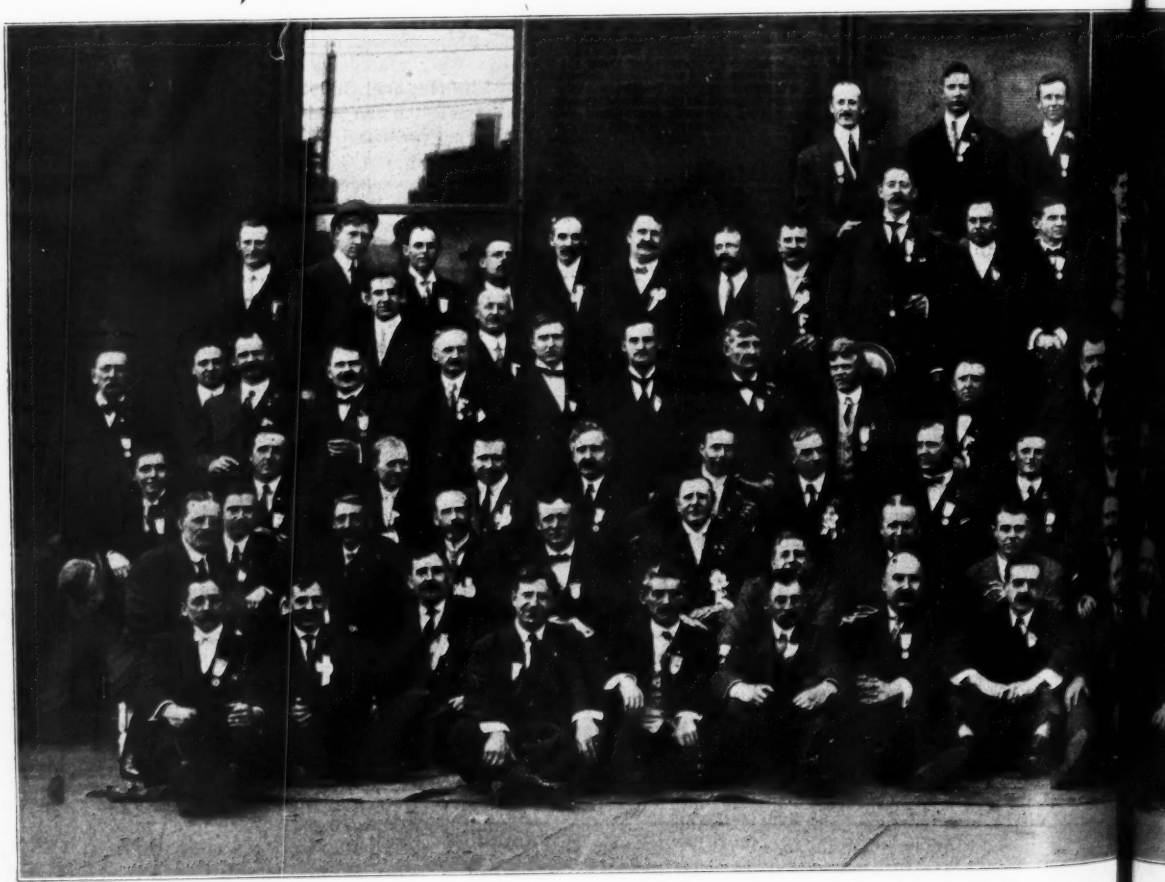
Thomas Kelly, of Thos. Kelly & Bros., Chicago, is at present enjoying the briny breezes from the Atlantic ocean on his annual vacation at Atlantic City, N. J.

Louis J. Christianson, the plumbing contractor, of 1275 Tripp avenue, Chicago, is recovering from the injuries he received about a month ago from the kick of a new horse.

C. J. Rainear, of the Philadelphia supply house that bears his name, has the sympathy of a host of friends both in and outside of the trade upon the death of his wife, which occurred Thursday, May 20.

L. A. Claussen, the popular master plumber, of 1936 Milwaukee avenue, Chicago, and his wife have the sympathy of a large circle of friends on account of the recent death of their little daughter, Minnie.

W. H. Crookston, of W. H. Crookston & Bro., 185 Wooster street, New York City, has been confined to



Delegates in attendance at the New Jersey State Convention, Jersey City, N. J., Ma

his home on account of sickness, but is now rapidly recovering and expects to be around in a few days.

H. A. Shunk, well known to the Cleveland trade in his capacity as manager of Rund Manufacturing Co.'s branch in that city, has resigned from that position and accepted a position as city salesman for the Welker Supply Co., of Cleveland.

Sidney Frohman, of the Threading Machine Co., Sandusky, O., has returned from the Pacific coast, having made a very thorough visit to all of the cities in that section of the country. He reports that he was extremely fortunate in securing a nice lot of business and believes that his experience is simply an indication of the general conditions prevailing in the West.

Fred J. Wagner and Fred Grosch, popular members of the Chicago North and West Side Master Plumbers' Pleasure Club, have been recuperating at West Baden, Ind., after a busy spring season. They returned to Chicago in fine trim last week just in time to attend a banquet in honor of the Fire Marshal of the Fourth Batallion at the Hudson avenue station, on which occasion Chief Wagner acted as toastmaster in such an admirable manner that some of his friends are of the opinion that he is eligible to a professorship in elocution at any university. Among those attending the affair were several aldermen and E. C. Wagner and Fred Grosch, well known Chicago master plumbers.

CHICAGO HAS NEW BOARD OF EXAMINERS OF PLUMBERS.

Chicago, Ill.—At the city council meeting held Monday evening, May 24, Mayor Busse announced the **appointment of Chas. J. Herbert** as the master plumber member **and William F. Petrie** as the journeyman member of the board of examiners of plumbers to succeed O. W. Hermann and H. H. Smith, who resigned after their indictment on the charge of having taken a bribe. Chas. J. Herbert, of Chas. J. Herbert & Son Company, and a member of the Board of Directors of the National Association of Master Plumbers, was unanimously recommended to Mayor Busse by the Chicago Master Plumbers' Association, and Mr. Petrie was recommended by local union 130 of journeyman plumbers. Their appointment was confirmed by the city council. The salary is $500 a year. **Edward R. Pritchard,** secretary of the health department, has been appointed secretary of the board without additional salary.

Photograph by W. R. Harrison, taken in front of the Columbian Club House.

DEATH CALLS PROMINENT MEN IN THE TRADE

Oscar H. Marschuetz, a Director of the Standard Sanitary Mfg.Co., and Francis X. Pund, Vice-President of the D. T. Williams Valve Co., among those who have joined the Choir Invisible

Oscar H. Marschuetz, of Louisville, Ky., a director of the Standard Sanitary Mfg. Co. and manager of the Ahrens & Ott works, died at 6 o'clock a. m., May 19, in Cincinnati, of chronic indigestion. Mr. Marschuetz was attending the American Foundrymen's Association. The remains were taken to Louisville and the funeral was held Friday afternoon, May 21, and was attended by the members of his family and the officials of the company with which he was so actively connected. He was born in Germany and was 55 years old. As a young man Mr. Marschuetz entered the employment of the L. Wolff Mfg. Co. some thirty or thirty-five years ago; his father was in the employment of that company as a coppersmith and was an intimate friend of Ludwig Wolff. The son came into the establishment to learn the trade of a machinist with Morgan Mullins and served his apprenticeship, becoming a first class mechanic. After some years' service he was put in charge, as a portion of his duty, of the machinery for manufacturing soil pipe and fittings. The salary he was receiving with the L. Wolff Mfg. Co. was considered large for that period, and when he was offered twice or thrice that sum he left and became connected with the Hoffmann & Billings Co. of Milwaukee, where he had charge of remodeling their soil pipe and fitting plant and constructing new machinery. Then he went into the employment of C. A. Blessing where he also improved the methods of manufacturing soil pipe. After a few years' service he went with the Ahrens & Ott Mfg. Co. as superintendent of the soil pipe foundry. After making it one of the leading plants in its line in the United States, he took up and developed for that company the manufacture of enameled iron plumbing ware, and when that concern was merged with others and formed the Standard Sanitary Mfg. Co. Mr. Marschuetz became connected officially with that company. He is survived by a wife and one daughter, who reside in Louisville. He was very much beloved and valued by his associates. His entire life was characterized by carefulness, diligence, good judgment, and discernment, and his business ability was beyond that accorded to most men.

Theodore Ahrens, Jr., was closely connected with him, and writes: "He had that rare faculty, possessed by but few men, which enabled him to take up and master a new and strange line, and his success in the difficult and complicated art of enameling on cast iron was most remarkable. He was acknowledged to be one of the foremost leaders in manufacturing in the plumbing supply trade, and his sudden and untimely death will leave a gap which will be hard to fill. He was a man of sterling worth, loved his family, was true to his friends, and faithfully kept every obligation that he assumed."

The Late Oscar H. Marschuetz, Louisville, Ky.

E. L. Dawes, general manager of the factories of the Standard Sanitary Mfg. Co., and therefore closely brought into contact with Mr. Marschuetz, writes: "Mr. Marschcutz was an exceptional man. I do not know where you would find his equal. He was a good machinist, a good foundryman, a pattern-maker—in fact he was one of the most all-around mechanics that I have ever known. In addition to this he had most excellent judgment in all business matters, and he was so direct in all of his work at the factories that he usually had a thing accomplished while the average man was planning how it should be done."

C. A. Sandt, Sr., of the Hardt Generator Company, of Easton, Pa., passed on at his home in that city last week.

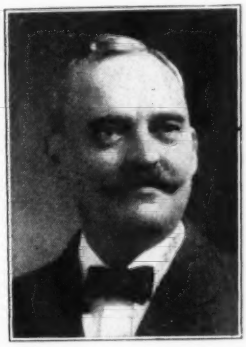
John F. Pease, the inventor of the furnace which bears his name, passed on recently at his home in Syracuse, N. Y.

Charles Dowd, a retired manufacturer of steam fittings, passed on recently at his home, 37 Wyckoff avenue, Brooklyn, N. Y., in his eightieth year. He was a native of Ireland and came to America in 1852.

Mrs. Frank W. O'Neill, wife of Frank W. O'Neill, Plumbing Inspector, Joliet, Ill., passed away after a long illness on Saturday morning, May 15. Mr. O'Neill

is second vice-president of the American Society of Inspectors of Plumbing and Sanitary Engineers, and the members of that society sympathize deeply with him in his bereavement.

Francis X. Pund, vice-president of the D. T. Williams Valve Company, Cincinnati, Ohio, passed away at his home in that city after a brief illness on Saturday morning, May 8, in his fifty-eighth year. Mr. Pund was born in Cincinnati and at an early age secured a position with Post & Co., and remained with them eight years or until the discontinuance of the business, when he and one of his fellow employes, Geo. Puchta, bought out Post & Co. and continued the business under the name of Puchta, Pund & Co., and later as the Queen City Supply Co., which became one of the best known and successful mill and factory supply houses in the country. In 1904, after a long and successful career, he entered the manufacturing business and with David T. Williams, formerly general manager of the Lunkenheimer Company, founded the well known firm of the D. T. Williams Valve Company, where he eclipsed his former successes and with his associates helped to build a large and successful valve concern. Mr. Pund was a prominent member of various business organizations in which he took a great interest. He is survived by his wife and three children. Charles K. Thomas, formerly sales agent of the D. T. Williams Valve Company, succeeded to his position at vice-president of that company.



The Late Francis X. Pund,
Cincinnati, O.

Eugene Duffey, member of the plumbing firm of Duffey Bros., of 633 Stevenson street, San Francisco, Cal., passed on suddenly last week from a stroke of apoplexy at his home, 1379 Masonic avenue, in that city, in his fifty-seventh year. He had been a resident of San Francisco for many years, and he is survived by his widow and two brothers, Charles F. and George L. Duffey, his partners in the plumbing business. He was planning to retire from business and the firm has for the last few weeks been selling its stock preparatory to the closing of its shop.

Patrick J. Liddy, a well known plumber at Meriden, Conn., passed on on Sunday afternoon, May 16, at his home at 16 Klock street after a long illness. Mr. Liddy was one of Meriden's successful young business men. He was born in Meriden and had lived there all of his life. After completing his education he took up the plumber's trade and about fifteen years ago started in business for himself. He first opened a small establishmnt at his home and when business increased transferred his shop to 69 West Main street. He was the owner of considerable real estate.

MASTER PLUMBERS IN SUCCESSFUL CONVENTIONS

California, Mississippi and Massachusetts State Associations meet in Annual Conventions and transact much business

Chicago Master Plumbers charter steamer for big excursion

CALIFORNIA MASTER PLUMBERS MEET IN PASADENA.

Pasadena, Cal., May 27.—[Special Telegram.]—One hundred and twenty-five delegates, as many alternates, and two hundred members of the various ladies' auxiliaries attended the **ninth annual convention of the State Association of Master Plumbers of California,** which met in this city Monday, Tuesday, Wednesday and Thursday, May 24, 25, 26 and 27. The sessions were held in Knights of Pythias hall.

As usual, much of the time was spent in entertainment, of which the Pasadena committee had provided a variety and an abundance. All of the evenings and the entire day Thursday were given over to pleasure.

Monday.

Monday morning **the meeting was called to order by State President C. H. Julian,** of San Diego, and the necessary formalities of business transacted. **E. W. Creller,** president of the Pasadena association, then **delivered an address of welcome,** in which he spoke of the work which had been accomplished at past conventions and the important problems before the body at present, and expressed the belief that the ninth convention would prove the most valuable ever held.

As Mayor Thomas Earley of Pasadena was out of the city, **City Attorney J. Perry Wood delivered an address of welcome on behalf of the municipal government.** He paid some pretty compliments to the plumbers of the state, as well as those of Pasadena, and did not forget "the ladies," who were a conspicuous feature of the entire convention.

At 2 o'clock **Monday afternoon** the convention again came to order to hear a **report from the committee on credentials,** which had been hard at work all day. No other business of importance was transacted during the afternoon, than the acceptance of this committee report.

In the evening a reception was held at the Hotel Maryland, one of the most beautiful of Pasadena's winter hotels, which was the official headquarters of the convention throughout the week.

Tuesday.

Tuesday morning another business session was held, and **in the afternoon the ladies** who accompanied the

party were taken in an automobile ride about the city, visiting Orange Grove avenue, Adolphus Busch's sunken gardens, and many other of the points of interest around Pasadena.

Tuesday evening the convention made up one of the biggest theater parties ever held in Southern California, when all the ladies were escorted from the Maryland to a Los Angeles theater, in two of the private parlor cars of the Pacific Electric Railway. A luncheon was served after the theater.

While their wives were visiting the theater, the plumbers themselves were amused at a smoker held in

Secretary, John L. E. Firmin, San Francisco.
Sergeant-at-Arms, George Stoddard, Berkeley.

Executive Board: Edward W. Crowell, Los Angeles; Frank J. Klim, San Francisco; John Cahill, Sacramento; J. W. Rowe, Fresno.

Delegates to the National Convention at Detroit: Edward W. Crowell, Los Angeles; and W. F. Creller, Pasadena. Delegate-at-Large: James E. Britt, of San Francisco.

Yosemite was chosen as the place for the next annual convention.

Delegates and friends attending the California State Association of Master Plumbers at Pasadena Monday and Tuesday, May 24 and 25. Photographed exclusively for "Domestic Engineering" at the Soldiers' Monument in Library Park, by George A. Daskam.

Eagles hall. Here a select program was presented and a great opportunity offered to get acquainted.

Wednesday.

The convention put in some hard work Wednesday, both morning and afternoon. The women were free from care, however, and took a trolley trip to Long Beach, where they spent the day and were entertained at luncheon by members of the Long Beach association.

Election of Officers.

The last business session came to a close with the election of officers for the ensuing year as follows:

President, John H. Eustice, Oakland.
Vice-President, Thomas Haggerty, Los Angeles.
Treasurer, Wm. F. Wilson, San Francisco.

Important Resolutions.

At the closing session resolutions were adopted favoring the establishment of public comfort stations and the standardization of plumbing supplies such as Cast and Wrought Iron Pipe. The association voted to have both these matters brought before the coming National Convention at Detroit.

The Grand Ball.

The great social event of a gay week was the grand ball, held in the music room of the Hotel Maryland Wednesday evening. The decorations were unusually fine, and music and dancing enjoyed until a late hour. The convention had concluded its active work, and was willing to relax.

Thursday—Los Angeles Day.

Thursday was officially known as Los Angeles day, and the members of the Los Angeles association got a chance to show their good will. They prepared a picnic at Schuetzen park, which is midway between Los Angeles and Pasadena, and the entire day was spent here by the delegates and their wives. Sports of many kinds were provided, and a picnic lunch of elaborate proportions served at noon.

Those of the delegates whose work was particularly pressing left for their homes Wednesday night, and the rest scattered Thursday night, leaving behind them an unusual record of activity.

One of the conspicuous figures of the convention was **Arthur C. Shaver, plumbing and building inspector of Pasadena,** who has made a record by pulling Pasadena from a rather low place, up to the top row of American cities in regard to sanitary regulations, and the efficiency of sanitary inspection.

Delegates in Attendance.

The following delegates were in attendance:

Los Angeles—Thomas Haverty, R. F. Beattie, S. J. Brown, W. H. Chollman, E. W. Crowell, G. J. Eustace, F. S. Hannaford, W. E. Hoffman, G. E. Howe, J. C. Hyde, F. A. Jay, D. Kavanaugh, C. V. Laws, G. E. Loek, A. H. Longley, M. O. Mould, E. Murray, G. W. Neal, T. H. O'Brien, L. W. Paul, J. B. Reeves, E. Roeder, L. A. Scholes, J. R. Stead, A. H. Thompson, J. Wiedenbeck, Dr. White, A. J. White, R. A. White, E. R. Wright, M. E. Yountin.

Oakland—J. H. Eustice, A. H. McKeron, J. A. McCard, C. A. Cook, Dan Crowley, Gus Thalen, L. R. Green, J. C. Bullock, W. H. Graham, L. E. Doton, Frank Furey.

San Francisco—Fred Snook, J. H. Dagneau, A. Coleman, Mr. Buick, Mr. Gainford, Frank De Lano, Charles Stutn, William Wilson, M. Cohn, Mr. Firmin, A. Newmark.

San Diego—C. E. Collins, Geo. Wade, S. Williams, F. A. Hilborn, J. Leonard, Earl Rhode, J. S. Johnston, C. F. Keith, H. Schultze, L. H. Arnold.

Fresno—R H. Cox, W. Rowe, V. J. Cox.

Late arrivals—J. P. Durm, C. L. Daniels, Monrovia; O. H. Miller, P. M. Boscom, Stockton; John Cahill, F. Waterman, Ed. Carlow, E. Vitsar, W. W. Mott, Sacramento; Chas. L. Baker, San Pedro; T. J. Warner, Long Beach; Geo. Stoddard, A. M. Paulson, August Schnoor, P. J. Sheehy, Wm. Webb, Berkeley; W. B. McKinney, Los Angeles; J. A. Stark, San Mateo; F. Barcroft, Madera; J. H. Davenport, Riverside. H. W. Hall.

MAINE PLUMBERS TO MEET IN JULY.

Portland, Me.—The Maine State Association of Master Plumbers is to hold its annual meeting early in July and at the same time will hold a ladies' day. J. A. Redlon, of Bath, Eugene Goss and J. H. Cogan, of Lewiston, comprise the committee of arrangements and to them has been left the decision as to the date and place of meeting. It is probable that the meeting will be held at New Meadows Inn. The gathering will be a large one, as in addition to the ladies a large number of visitors will be present from out of the state, including officials of the Massachusetts and New York state associations.

Mississippi Master Plumbers Meet at Biloxi

Biloxi, Miss.—The Mississippi State Association of Master Plumbers held its **third annual convention** in this city on Monday, Tuesday and Wednesday, May 10, 11 and 12. The meeting was well attended, nearly fifty delegates being present, and all the delegates attended strictly to business, making it probably the most successful convention in the history of the association.

Delegates in Attendance.

The following is a complete list of delegates and firms represented at the convention:

J. T. Phillips, Greenwood; George Shuller, Hazelhurst; C. H. Johnson, Port Gibson; W. H. Bruser, J. B. Smith, J. L. Andress, Vicksburg; T. J. Holmes, P. W. Mulvahill, J. H. Smyths, Natchez; H. E. Beasley, Bramlet Hardware Company, W. T. Adams Machine Company, Corinth; Turner & Pierce, Zeno Yates, Starkville; Winona Hardware Company, Winona; Withite & Turner, West Point; W. W. Hall Hardware Company, McComb City; C. W. Hewett, Braggi Plumbing Company, Tupelo; T. R. Warburton, Aberdeen; Martin Hass, Robert St. Amant, Peter Libbert & Company, William Byrd, Biloxi; L. D. Boadwee, Brookhaven; M. D. Stoffler & Company, Brookhaven; J. H. Hooks, Clarksdale; J. M. Knaebel, Crystal Springs; Perry Jones & Company, Granada; Greer Company, Gulfport; Sanitary Plumbing Company, Hattiesburg; W. R. Williams, Hattiesburg; M. L. Slay, Hazelhurst; R. S. Bailey, L. Ludenbach, Jackson; S. A. Carnes, Laurel; Ben E. Heidenrich, McComb City; Meridian Plumbing Company, Briggs Plumbing Company, John Hass, Meridian; G. W. Dale, Ocean Springs; Charles L. Chapotel & Son, Pass Christian; W. M. Hendricks, Water Valley; R. H. Coto, Winona; A. P. Cartright, chief engineer of Meridian Water Works.

All Sessions Behind Closed Doors.

All the sessions of the convention were held behind closed doors and among the questions which received the principal part of the delegates' attention were: Freight rates for plumbing supplies and legitimate trade protection. Much time was also devoted to interchange of ideas and experiences.

Election of Officers.

The officers who directed the affairs of the association the past year were all re-elected as follows:

President, S. A. Carnes, of Laurel.

Vice-President, Martin Hass, of Biloxi.

Secretary, W. R. Williams, of Hattiesburg.

The executive committee will be appointed by the president.

Brockhaven was chosen as the place for the next annual convention.

Votes of Thanks.

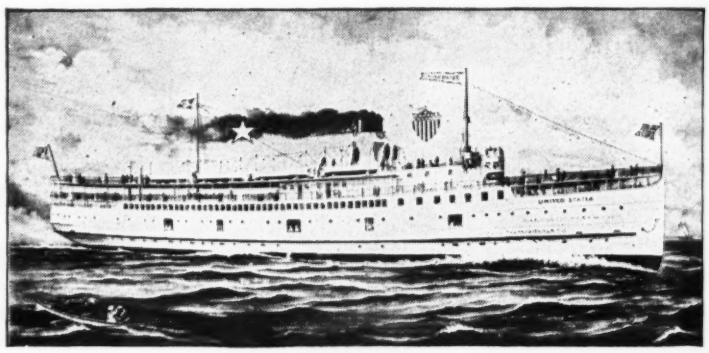
Votes of thanks were tendered to the mayor of Biloxi, the Hon. T. S. Rosell, for courtesies extended to the delegates in convention and also to the officers of the association for their excellent work in building up the organization.

Entertainment Features.

The local association entertained the visiting delegates at the Airdome on Monday evening, and a street car ride to Beauvoir was given them on Tuesday afternoon. On Tuesday evening a very enjoyable smoker was given in their honor at Kennedy's hotel. The crowning entertainment feature, however, was an all-day trip to Ship Island, which brought the successful convention to a close.

CHICAGO MASTER PLUMBERS PLAN BIG EXCURSION.

Chicago, Ill.—The Chicago Master Plumbers' Association has made arrangements to hold its next annual outing on Wednesday, June 16, setting the day aside as "Master Plumbers' Day" and urging every master plumber in the city to close his establishment on that day and with his family and friends join the big excursion, which will this year have Michigan City, Ind., as its place of destination. The plumbing supply houses in the city have also been asked to close their doors on that day to give their employes a chance to attend the outing. The new steel steamship "United States," shown herewith, has been chartered for the occasion and will leave the Clark street bridge at 9 o'clock sharp, Wednesday morning, June 16, with what is expected to be the finest and happiest crowd it has ever carried and probably ever will carry. The committee in charge of the arrangements is a guarantee that no stone will be left unturned in an effort to make the event a most successful and memorable one. It is composed of the following gentlemen: E. C. Wagner, chairman; Jos. Scheuer, Wm. Hanrahan, A. W. Bahn, Peter Feltman, John Kleker, F. J. Dillenberg, A. C. Peterson, L. A. Claussen, P. J. Foley, Stanley T. Loula and William Gawne, Jr. Tickets for the outing are 75 each for adults and 40 cents for children, and they can be obtained from members of the committee or from Assistant Secretary Peter M. Munn from now on and until the day of the excursion. The steamer "United States" is probably the best boat of the excursion fleet on Lake Michigan, it accommodates 2,500 persons comfortably, and it is expected that the several branches of the plumbing trade in Chicago with their friends will tax it nearly to its capacity on that day. The return trip will be started at 4 o'clock, landing the excursionists in Chicago at 7 o'clock. Among the more notable features of the day at Michigan City will be a baseball game between picked teams of the master plumbers of the North Side and the South Side, and a similar game between the Northwest Side master plumbers and plumbing supply salesmen.



Steamer "United States," chartered by the Chicago Master Plumbers' Association for its excursion to Michigan City, Ind., to be held Wednesday, June 16, 1909.

WITH THE FRENCH HEATING ENGINEERS.

Paris, France.—[Special to "Domestic Engineering."]—"Association Amicale Des Ingenieurs de Chauffage et Ventilation de France" (the Friendly Association of Heating and Ventilating Engineers of France), which was recently organized with headquarters at 148 Boulevard Magenta in this city, held its fifth monthly meeting in the "Germain Restaurant" at 170 Rue Montmarte on Wednesday evening, May 12, at which Mr. H. Mosse read an excellent paper on "Heating and Lighting by Electricity." The headquarters of this society is in charge of its vice-president, Mr. G. Debesson.

CONVENTION DATES.

June 8-12, 1909.—Twenty-ninth annual convention of the **American Water Works Association,** at Milwaukee, Wis.

June 14 and 15, 1909.—Joint meeting of the **Central Supply Association** and the **Eastern Supply Association,** at Atlantic City, N. J. Headquarters at the Chalfonte.

June 14, 15, 16 and 17, 1909.—Annual convention of the **National Association of Master Steam and Hot Water Fitters,** at Niagara Falls, N. Y.

June 22, 23 and 24, 1909.—The twenty-seventh annual convention of the **National Association of Master Plumbers,** at Detroit, Mich. Headquarters at the Pontchartrain.

July 15 and 16, 1909.—Summer meeting of the **American Society of Heating and Ventilating Engineers,** at Indianapolis, Ind.

June 15, 16 or 17, 1909.—Annual convention of the **Upper Peninsula League of Master Plumbers,** at Calumet, Mich.

August 24 and 25, 1909.—Regular quarterly meeting of the **National Association of Brass Manufacturers** in Detroit, Mich.

PEORIA PLUMBERS DECLARE OPEN SHOP.

Peoria, Ill.—Eighteen of the twenty plumbing shops in this city were declared open Thursday morning, May 27. This action was decided upon at a meeting of the Master Plumbers' Association the night before and comes as an answer to the striking plumbers, who have been out for three weeks.

Massachusetts Master Plumbers Meet in Boston

Boston, Mass.—Seldom has the Massachusetts State Association of Master Plumbers held a busier session than that which marked the forty-ninth annual convention which was held in Elks hall in this city on Thursday, May 13. From the time the sessions opened early in the forenoon until late in the afternoon it was one round of business and the delegates even begrudged the time they were obliged to give up for dinner. Over a hundred members were in attendance during the day and all took an active interest in the matters at hand. **The usual "Night Before" celebration** which in the past has been the social feature of the annual convention **was omitted this year** and this was a big disappointment to many of the association members.

Opening Session.

President J. W. Kennelly, of Springfield, was one of the first to arrive in the convention hall on Thursday morning and as soon as he could muster a quorum he **called the morning session to order.** Other members continued to arrive from time to time until most of them were on hand before noontime.

The first business to be taken up was the appointment of a sergeant-at-arms, a credential committee and an auditing committee. **F. F. Muldowney,** of Boston, was named for the first position, one with which he is thoroughly familiar, and the committees named were as follows:

Credential committee: J. K. Tully, of Boston, chairman; **M. F. Murray,** of Chelsea; **George Smith,** of Springfield.

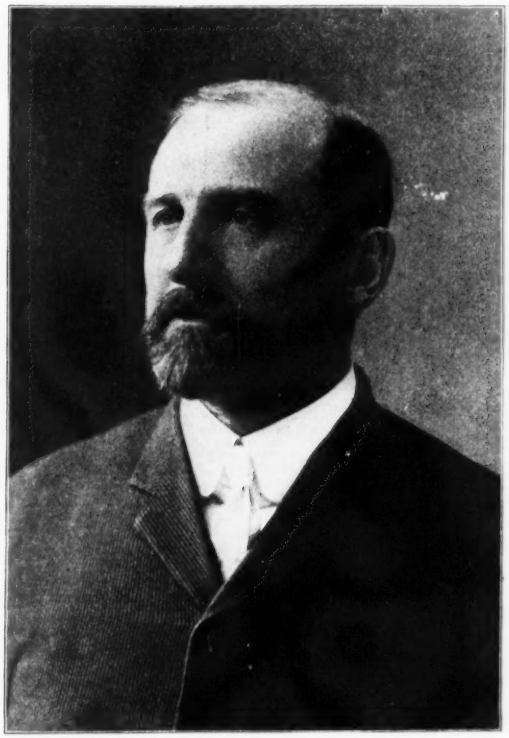
Auditing committee: Robert Wilson, of Springfield, chairman; **J. J. Fisher,** of Somerville; **L. W. Stevens,** of Boston.

John P. Drury, the veteran secretary of the association, **was next called upon to read the minutes of the last meeting,** which were approved by the convention. **Mr. Drury also read his annual report,** which was very pleasing to the meeting. It showed an increase in the annual receipts of $52.50, an increase of two in the total membership and told of the mailing of 5,000 notices and other pieces of mail matter.

Treasurer O. S. Kendall, of Worcester, then **read his report.** It showed a balance of $410.72 in the treasury at the present time with all bills paid with the exception of the expenses of the day. After the reading of the report the meeting voted the money for the day's expenses.

The old question of the rubber stamp which was brought up and discussed at length at the national convention which was held in Boston last summer **was taken up at the meeting and a prolonged discussion followed. David Craig,** of Boston, former national president, **gave some of his ever welcome advice** and several others participated in the discussion, which finally resulted in the association voting to procure a lot of stamps and send one free to each member with the request that they use it on all orders and correspondence with the jobbers. Before the vote was taken **a communication** which had been received **from Secretary Kavany, of the New York State Association,** urging the adoption of the stamp **was read to the convention.**

Secretary Drury announced that the report of the sanitary committee which was submitted at the last national convention had been printed and that he was prepared to take orders for it. Most of the delegates were anxious to secure the pamphlet and left their orders with the secretary.



David Craig, of Boston.
Former President of the National Association of Master Plumbers.

The secretary also read **a communication from Charles C. P. Tietze,** of Detroit, chairman of the hotel committee of the national meeting, urging prompt action in the matter of securing hotel accommodations for the Massachusetts delegates. He said that several other conventions were to be held in his city at the same time as the plumbers' and that it was therefore necessary to make all arrangements as early as possible.

Chairman George F. Uber of the legislative committee asked permission to address the convention and **urged that any member who had any communication concerning plumbing legislation,** which needed the attention of his committee, **have it in his hands before the first of June so that it could be given the proper attention.**

The Standing Committee on the Revision of the By-

Laws appointed at the Springfield convention of October 21, 1908, **recommended the following changes in the Constitution and By-Laws of the Association:**

Amend article 6 and rule 1 of the Constitution by inserting the word year, the words to be arranged for by the executive board so that the article shall read as follows:

"The annual meeting shall be held in May of each year in Boston, date and locations of other meetings during the year to be arranged by the Executive Board. Special meetings may be called by the President with the consent of the Executive Board in case of exigency."

The committee consists of William J. Hyland, chairman; W. K. Donovan, John P. Drury.

After the change recommended had been made it was voted to send copies of the by-laws, which during the past year have been considerably revised, to each member of the association.

The last matter to be taken up before the noon adjournment was the report of President Kennelly which he read himself. The report was received with approval and the recommendations which it contained were referred to the incoming executive committee. President Kennelly's report was as follows:

President's Report.

"The treasurer's report will indicate a healthy condition of our finances, but the increase in our membership has not been all that I desire. Owing to something that happened over which I had no control, I was prevented from paying a visit to all the local associations in the state as I had intended to do, but I recommend to the incoming board that the president ought to pay a visit to all local associations, at least one visit during his term of office, for membership in this association is an honor in bringing about and maintaining the present sanitary condition of the country and the health of our people. Perhaps it may not be in the best taste to dwell too much or too long upon our achievements, and yet we may, I think, be properly gratified at the place that this association has come to occupy; an enviable position, not only in Massachusetts, but all over the United States.

"On assuming the chair of this association, the first act of mine was to render aid to our brothers in Chelsea. Though only a trifle, I assure you it was appreciated. I attended the National convention in Boston and must say that I felt proud of our delegates, as they attended all of the sessions. **Also I cannot give Boston too much praise or credit for the way they received and entertained the delegations during the week of the convention.** I wish to express my sincere thanks to you for the honor of representing Massachusetts at Boston last year.

"On September 24th the executive board of the State association held a meeting at the Warren hotel in Worcester. I invited V. R. Donovan, of Brockton, to be present to represent the Brockton association and present their grievances to the board, which he did in an able manner. After discussing the matter it was decided to leave it to your president and vice president, Mr. Curtin, of Medford, to adjust the matter without delay. On September 30th Mr. Curtin and I went to Brockton and visited the parties most interested. After discussing the matter with them, we thought the affair would be settled in a satisfactory way to everyone, and so reported to the convention held at Springfield, October 21, 1908. But we find today that the same trouble exists and is now in the hands of the National Association.

"January 14, 1909, we met at the Crawford House in Boston. There were present Vice President A. F. Curtin, Treasurer O. S. Kendall, W. H. Hill, John F. Cabeen, W. R. Parks, Jr., C. H. Cronin, J. C. Luby and John P. Drury, secretary. February 18th the executive board and Messrs. David Craig and E. C. Kelly, attended by invitation, a meeting at Beverly and were much impressed by the good feeling among the members. We hope that a great deal can and will be accomplished by that local association, and I sincerely thank them for their co-operation in our good work.

"April 15th the executive board held a meeting at the Crawford House, all the members of the board being present: A. F. Curtin, O. S. Kendall, W. H. Hill, C. H. Cronin, T. J. Ryan, W. R. Parks, Jr., John P. Cabeen and J. C. Luby.

"April 2nd our legislative committee met in opposition to passage of house bill 1290. In addition to the members of the committee, David Craig, C. H. Cronin and E. C. Kelly, Mr. Kendall, Mr. Luby of Worcester, Mr. Cabeen of Salem, Mr. Parks of Taunton and I were present. The bill will be discussed at this convention.

"I sincerely thank the officers and members of the association for their co-operation and help during my term of office, especially our able secretary, J. P. Drury, for his prompt and efficient work as secretary of our state association. To all the committees without exception, for matters referred to them and for constant interest in their work, I am under the deepest obligation. I cannot extend for my successor in office no better wish than a continuation of the loyal support I have received."

It was 1:30 before the session adjourned for dinner, which was served in the banquet hall directly below the meeting hall by a caterer. An elaborate menu was provided which was thoroughly enjoyed by the hungry delegates. It was so late before dinner was reached, however, that as much time as the members would have liked to spend about the tables could not be spared and at 2:30 they had all reassembled in the hall and were once more ready for the business in hand.

Afternoon Session.

Robert Robertson, of Beverly, was the first to be introduced at the afternoon session. He was **chairman of the sanitary committee and presented a report in which he compared the public conveniences furnished abroad with those of the United States to the detriment of the latter.** He said that the little city of Salem, Mass., was one of the leading cities in providing sanitaries for its citizens. He also spoke favorably of the stations provided by the city of Boston in connection with its subway arrangements. The report in full follows herewith:

Report of the Sanitary Committee.

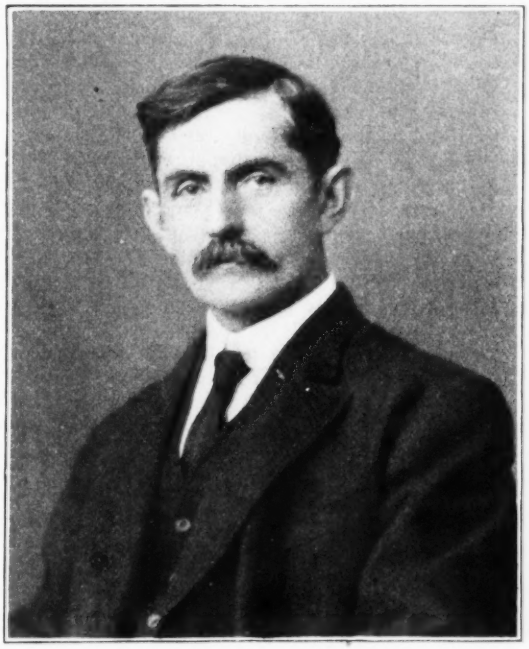
"As chairman of the Sanitary Committee I called the committee together on the matter of subject to be taken up for discussion or to be reported upon at the next meeting of the Association. Our meeting lasted two hours, but we were unable to find a subject we thought we could properly cover in a report on to the convention, however we discussed in a general way various topics, including **public comfort stations, public baths and other public utilities dealing with cleanliness and public health.**

Emphasizes Need of Public Comfort Stations.

"As a committee we will make no report, but as an individual I have taken a liberty of writing out and presenting to you **my experiences and ideas in the matter of public comfort stations.** A few years ago I took a summer outing across the Atlantic and spent some time in England, Scotland and the continent. One of the first things that interest men in our line of business when they become sufficiently acquainted to look about and which without question draws from all Americans words of approbation and admiration is **the convenient and frequent comfort stations located in the public streets of Scotland, England and France.** There is no question but that we consider ourselves a good ways in advance on many matters of public utilities throughout the United States as compared with foreign countries, but without question **we are twenty years behind in the matter of public comfort stations.** We find them across the water conveniently located in small public squares or at the intersection of two streets, and are what we might call an island of safety in the center of a large and bustling thoroughfare or square.

"In England and Scotland practically all the stations are underground, but in France we find many above ground. In England where I had the most experience they are controlled by a 'Drop a penny in the slot device,' which gives you a compartment containing a lavatory with towels, soap, brush, etc. When you compare the privilege that permits you in nearly every busy community of dropping into such a place as this you appreciate the utter hopelessness of finding anything of this kind in an American city, except of course with a very few exceptions. Ordinarily in our cities when a man desires to brush up he drops into a hotel or a bar room. In the hotel he is looked over by a man in attendance who waves a brush at him and if he merely does that he expects a tip, and if you don't give it you feel as though you had been pretty close. On the other hand, in the bar room you find dirty towels and sometimes filthy conditions in addition to this. Doesn't it seem strange that these conditions are as they are in this glorious country? Take for instance my own city of 20,000 inhabitants. We have no hotels or bar rooms and no public comfort stations. The consequence is that every man who does business in the center of any city or town is busy from morning to night with people who desire a drink of water or the use of your toilet room. It may seem selfish to object to this, but in my opinion it should not be necessary, and **every town or city of over 5,000 inhabitants should be compelled to maintain one comfort station for every five thousand people.** The installation is not expensive when compared with many other city improvements and at many busy corners where these pay closets, etc., could be placed, they would be self-supporting. We have but to look at the station at Park street in Boston at the corner of the Common to see the usefulness and great benefit derived from it.

"My idea in bringing this before the committee was to see if it was not possible to create a feeling so that **we might with perfect propriety have our legislative committee go before the next general court with some law on public comfort stations.** We have heard of



C. H. Cronin, of Boston.
Member of the Board of Directors of the National Association of Master Plumbers.

one or two unsuccessful attempts being made to carry on places of this nature and the failure has been attributed to the fact that people using the places would steal everything but the heaviest fixtures, but even if **this is so the public** must be educated up to the necessity of treating public utilities of this kind as they would things of their own. If we can be the means of assisting in the good work let us do so by all means. For many years **we have claimed at our conventions that one of our main aims was to further everything we could for the benefit of the public, especially the public health. This certainly seems to me one of the places where we can do much in this direction.** Since I began to consider the question I have been very glad to see that the city of Salem, pioneer in a great many things, has taken up the matter of a public comfort station, intending to install one of considerable size near the center of the city. I also find the city of Beverly has taken up the question by appointing a

committee from the city government to investigate it. If we would all give this our consideration and start the wheels in our different cities and towns the legislature would doubtless awaken to the fact this was a necessity for the general public and something would be done. I think it behooves us all to do all we possibly can toward the installation of such an absolute necessity.

"(Signed) **Robert Robertson, Beverly.**"

Legislative Committee's Report.

The report of the legislative committee was next taken up and it was upon this report that the most interesting and prolonged discussion of the day took place. The report was read and then the matters contained in it were put before the convention. It had to do mainly with the bill now before the legislature providing in part that "if the holder of a certificate of registration or of a license violates any statutes, ordinance, by-law, rules or regulation relative to plumbing, the board of health or inspector of buildings having jurisdiction where such violation is committed, may forbid the holder thereof to engage in the business of plumbing as a journeyman plumber for a term not exceeding one year within the city or town where such board or inspector has jurisdiction. Notice of such action shall be forwarded by the said board or inspector to the state examiners."

It was pointed out that this bill was drafted by the inspectors of plumbing and that it was manifestly unfair to the plumbers, both masters and journeymen. The speakers, who included David Craig, of Boston; E. C. Kelly, of Boston; E. W. Cox, of Boston; National Director C. H. Cronin, of Boston; J. S. Cassidy, of Lowell, and others, declared that if the inspectors were to have the power to revoke plumbers' licenses and make them stop work for a year it would crush them. They also declared that many errors might be made inadvertently which could be easily rectified and which the plumbers would be only too glad to rectify, which under this act might be sufficient cause in the eyes of the inspector to revoke the license, and this in case of a big job would mean a big financial loss to the plumber if not bankruptcy.

On motion of J. S. Cassidy the convention voted to approve the action of the association's legislative committee in refusing to approve of the proposed bill and the delegates went on record as thoroughly opposed to the bill.

David Craig proposed that a copy of the association's vote of disapproval be forwarded by the secretary to each member of the house and senate and to Governor Eben S. Draper, and it was so voted.

President Kennelly announced that the secretary had received a letter from the inspectors asking permission to appear before the convention and explain their side of the case but that he had courteously declined their request. This action by the president was highly approved by the convention.

Resolutions.

The following resolution was submitted by William H. Hill of Marlboro, former president of the state association, and referred to the incoming executive committee. The resolution was discussed by W. J. Hyland, of Springfield; Andrew F. Curtin, of Medford, and Mr. Fisher, of Somerville. The resolution follows:

"Whereas, cities and towns, also corporations selling to the public such commodities as gas, water, electricity, oil, etc., purchase such material for construction work in large quantities, at special wholesale prices, and distribute such goods to the public at cost, or less, and at times absolutely free of cost, thereby interfering and hindering merchants trying to obtain a living on such goods and materials, to such an extent as to drive them out of business;

"It is hereby resolved, that we, master plumbers of Massachusetts, condemn such practice.

"It is further resolved, that corporations selling water, gas, electricity, oil, etc., should be restricted from selling or giving away material, other than the products they manufacture and sell.

"It is further resolved, that we, the master plumbers or Massachusetts, ask the corporation of steam and gasfitters, electricians, and manufacturers of such goods and material to prevent such practice."

The Apprenticeship Committee's Report.

The Apprenticeship Committee, consisting of Robert Wilson, I. Howland and Charles Albee, submitted a report which was in part as follows:

"If the material and price and quality is all right the only cause of our lack of profit must be in the quality of the workman, and although it cannot be wholly remedied in a day, a move in the right direction, along proper lines, should in time give us the only remedy and that is proper system of apprenticeship, governed in regard to numbers and term of service only by the master, who, placed as he is, can alone know what is best for his own interests.

"In olden times when a boy was apprenticed to a master he became the property of the master for the length of time agreed upon, generally leaving his own family and entering that of his employer, and being treated and governed as one of the family, thus giving the master a full opportunity to acquaint himself with the character and ability of the boy, and at the same time there can be no doubt there was a far larger average of good mechanics turned out than at the present time. But with the evolution of time, natural changes in the methods of conducting business and manner of living, brought changes in the manner of employing apprentices, and the individual government and the instruction of apprentices changed from the hand of the master to that of the journeyman, and many of you know that the workman of fifty years or more ago took a far greater interest in his apprentice or helper than he does today. It is a well known fact that there are journeymen today so near sighted for the welfare of the trade that they will do all they can to hinder rather than help a boy to become proficient in his trade.

"To counteract that we have in many cities trade schools opened evenings that are better than the old way, when used in conjunction with every day experience to be obtained by any smart boy, who is really endeavoring to learn our trade. In schools he not

only gets individual instruction in the mechanical part, but a thorough drilling by means of lectures in the technical side of the trade. A bright boy who has served three years for you and attended such a school for two terms is far better able to pass an examination for his license than one who has served five years in the old way. In places which have no such school, the master should interest the boy in a correspondence school and we are sure he would find this as good an investment as could be made.

"Ask yourself this question: Is it not your own fault that the trade, as regards the quality of its mechanics, is in the deplorable state it is? The next question is: Can it be cured? The whole matter is in your own hands as only by instant and concerted action, systematic throughout the state, through the adoption of some method of employment of apprentices, and intelligent personal supervision of their course through the term of their service, can you get that for which we are all striving, a better class of mechanics, and what is of more importance, an improved class of competition, for a poor workman must make a bad competitor when he starts in business for himself.

"We find that in the city of Rochester they are working under a unique arrangement in the matter of employing apprentices. An applicant for the position works under an improved form of application for position with the master, he agreeing to serve four years with a master, the minimum and maximum wage being stated in the agreement, also the number of hours to be worked by him, the master agreeing in return to teach him in all the different departments of the trade. Should the master desire to release him to another shop he is given back his application, with recommendation properly filled out on the back of same as to his efficiency and term of service, which he files with his new employer. While this scheme has been in use but a short time it is found to work satisfactorily to all concerned, as it has a tendency to impress upon the apprentice his responsibility and at the same time keep the undesirable from being advanced in the trade by jumping from one shop to another, and thus becoming in time a detriment to the trade."

Election of Officers.

The election of officers for the ensuing year and the naming of delegates and alternates to the national convention was next taken up. President Kennelly appointed as election committee John R. Gillespie, Sharon, chairman; John Cosden, Boston; V. J. O'Donnell, Worcester; C. A. Albee, Springfield, and Richard J. Welch of Somerville. While this committee was busy preparing a slate a recess was declared.

When the committee made its report Mr. Donovan of Brockton immediately took the floor and objected to the list as presented claiming that the southern part of the state should be represented on the executive board. He **nominated John E. Holland** of Brockton, who heads the local association in that city, for vice president, but he was defeated by a large majority.

The officers elected were:

President, Andrew F. Curtin, of Medford.

Vice President, J. F. Cabeen, of Salem.

Secretary, John P. Drury, of Boston.

Treasurer, O. S. Kendall, of Worcester.

Delegates to national convention: Robert Robertson, of Beverly; **O. S. Kendall,** of Worcester; **A. F. Curtin,** of Medford. Alternates: E. G. Conant, of Uxbridge; J. W. Kennelly, of Springfield.

Sergeant-at-arms F. F. Muldowney escorted the new president to the chair and also the new vice president. Both the retiring and the incoming president made short addresses.

Votes of thanks to the retiring officers and the trade press were passed and after the authority to pay the expenses of the delegates to the national convention had been voted **National Director C. H. Cronin spoke.**

The convention was adjourned at 5:40 o'clock.

Delegates in Attendance.

The following is a complete list of those in attendance:

Boston: Thomas J. Tute, John W. Sasden, B. F. Godfrey, C. H. Cronin, David Craig, John J. Vogel, J. P. Vogel & Son, E. W. Cox, Pierce & Cox, George E. O'Brien, Perley H. Blake, M. J. Keene, J. Warren French, Daniel Shannon, Thomas E. Thorpe, James J. Logan, E. C. Kelly, John P. Drury, Llewellyn W. Stevens, James J. Clark, John K. Tully, Michael Ahearn, Frederick N. Capper, M. T. Kelly, William N. McKenna, C. J. Sullivan, J. O'Connell, John Crawford.

Worcester: J. C. Luby, F. P. Gilbert, O. S. Kendall, H. A. Desper, Thomas J. McManus, M. J. Maher, C. F. Ostberg, V. J. O'Donnell, W. A. Toner & Co.

Springfield: C. A. Allbe; J. G. Howland, of the Oliver & Howland Co.; George Smith, of George Smith & Co.; T. J. Ryan; W. J. Hyland, of the W. J. Hyland Mfg. Co.; Robert Wilson; J. W. Kennelly, of J. W. Kennelly & Son.

Chelsea: Isaac J. Walters, of Isaac J. Walters & Co.; C. N. Carter; C. E. Webber; Joseph Locke; H. J. Rittershaus; E. Miller, of E. Miller Co.; A. K. Mann; W. H. Murray.

Somerville: T. H. Moore, J. J. Fisher, Edwin Connell, H. J. Connell, W. D. Hanson.

Beverly: A. C. Gordon; C. C. Pickett, of Pickett & Gordon; Thomas J. McDonnell; Robert Robertson; F. W. Williamson.

Lowell: William F. McEdholm; John J. Gaffney; Thomas E. O'Day, of Scott & O'Day; William Farrell, of Farrell & Conaton Co.; J. M. Stewart; Richard J. Welch, of Welch Bro.; Charles H. Hobson, of H. R. Barker Mfg. Co.

Taunton: W. R. Park, Jr., of W. R. Park & Son; William T. Galvin; Andrew McGlynn, of McGlynn & Co.; I. F. Whitmarsh; P. O. Perra, of Perra Bros.; James Nagel.

Cambridge: A. H. Ricker, J. S. Cassidy, Higgins & Co.

Brockton: V. R. Donovan, of V. R. Donovan & Co.; T. J. Kenney; J. E. Holland, of J. E. Holland Co.

Brookline: F. F. Muldowney, Frank B. Connor, D. F. Harrington.

Holyoke: C. P. Lyman, John A. Tuckey.

Salem: J. E. Cabeen.

Fitchburg: J. W. Burtt, Brownell-Mason Co.
Clinton: Peter Maitland, of R. Maitland & Son.
Uxbridge: E. G. Conant.
Sharon: John R. Gillispie.
Malden: E. P. Kinney.
Whitinsville: Levi Rasco.
South Framingham: James Sheldon.
Haverhill: Fred S. Mills, of Mills & McClintock.
Manchester: Edward S. Bradley.
North Chelmsford: Thomas H. Murphy, of Thomas H. Murphy Co.
Medford: A. F. Curtin, of Page & Curtin.
The trade press was represented as follows: A. H. French, "Domestic Engineering"; W. A. McCormick, "Plumbers' Trade Journal"; E. A. Stevens, "Engineering Review"; John Nelson, "Metal Worker."

Convention Notes.

John P. Drury and O. S. Kendall have once more been re-elected to their respective offices of secretary and treasurer which they have filled so efficiently for several years past.

President Curtin was greeted with tumultuous applause as he took the chair following the election. He announced that he would name his executive committee soon.

Former National President David Craig was as usual a leading light at the meeting and whenever a weighty question came up was always the first to be called upon.

J. S. Cassidy, of Lowell, who was for many years a plumbing inspector himself, was able to help the association members in their understanding of the position of the plumbing inspectors on the bill which was discussed considerably and his presence as a member of the association was appreciated.

It seemed nice to be addressing our old friend, C. H. Cronin, of Boston, as National Director Cronin. And he's still the same good fellow for all his honor and title.

A meeting of the Massachusetts Master Plumbers **would hardly be complete without Brother F. F. Muldowney** as sergeant-at-arms. And he enjoys the place as much as the others enjoy having him there.

President Kennelly, the retiring head of the association, in his report bemoaned the fact that he had not been able to do all that he would have liked for the association during his term, but for all that the members were sufficiently satisfied to want him for another term and were greatly disappointed when he absolutely refused to serve.

The dinner was alright, but the trouble was the delegates had too much business on their mind and most of them wanted to get away early in the evening and couldn't afford the time for social intercourse—**it was a business convention in every sense of the word.**

If all the state associations show as much interest in the coming national gathering as is shown in the Massachusetts association, there's likely to be a record attendance at the June meeting. It's a long way to Detroit, but there's quite a number of Bay State plumbers who will find their way there.

A. H. French.

MILWAUKEE TO BE WELL REPRESENTED AT DETROIT CONVENTION.

Milwaukee, Wis.—Headed by William H. Halsey, president of the National Association of Master Plumbers, a delegation of fifty or more Milwaukee master plumbers will attend the twenty-seventh annual convention at Detroit, Mich., from June 22 to 24. The Milwaukee delegation will be re-inforced by at least an equal number representing the cities of the state. The Milwaukee Association of Master Plumbers has elected the following-named delegates, according to the official list given out by President Halsey: W. H. Halsey, P. H. Murphy (secretary), David Polacheck, Jacob Belz, A. J. Maag, Isaac Toussaint, H. Lippert, Charles G. Schumann, L. V. Hankey, O. P. Zimmermann, William Boettcher, Emil Henoch, J. R. Williams, and Walter Dusold, president of the Milwaukee association. Alternates: P. Curley, H. Neugebauer, B. Dale James Meisham, D. Stern, L. Droese, J. Stemper, Edward Grassler. The Wisconsin association has chosen the following delegates-at-large: P. H. Ryan, Appleton; Albert Voelz, Milwaukee; Jacob Schuh, Milwaukee, president of the state association. President Halsey and Secretary Murphy are working overtime in making the general arrangements for the convention, which thy believe will be the largest and best attended that the national association has ever held. Milwaukee wants to entertain the plumbers soon, and will no doubt put in a bid for the 1911 or 1912 convention while the matter of the 1910 convention is before the meeting at Detroit.

PLUMBING CLASS GRADUATES.

Boston, Mass.—The class in plumbing at the North End Union at 20 Parmenter street, was graduated with exercises held in the union hall on Friday evening, May 21. The exercises were made the more impressive by the presence of parents and friends of the graduates and a large number of other guests. The Rev. E. A. Horton, a director of the union, presided, and, after the visitors had been given an opportunity to see samples of the work of the graduates which were exhibited in the gymnasium, made a short address of welcome in which he dwelt upon the object of the union of the plumbing school in particular. **David Craig,** president of the Boston Association of Master Plumbers and former national president; **C. H. Cronin,** a prominent Boston plumber and chairman of the supervisors of the plumbing school, and the Rev. Edward Cummings **were other speakers. The diplomas were presented by Daniel Shannon,** another prominent local plumber. The list of graduates was as follows: Harry Baum, Malden; Frank C. Crowell, Everett; William Dold, Roxbury; Harold E. Kennedy, Boston; Alfred S. Macomber, Waverly; Dennis J. Smith, Boston; Louis Tolen, Malden and Arthur B. Willard, Marlboro.

La Porte, Ind.—G. R. Tyrrell, of this city, reports the prospects fair for the coming season. Mr. Tyrrell has secured the contract for the plumbing and heating in Rear Admiral Ingersoll's beautiful residence here, and is installing the finest fixtures in the most up-to-date manner. The contract amounts to $1,700.

Stimulating Heating Sales.

As the public learns more about house heating, the trade receives increased business. Advertisements explaining the merits of steam and hot-water heating by means of IDEAL Boilers and AMERICAN Radiators were brought to the attention of over 150 million readers of magazines and newspapers during the past year.

AMERICAN Rococo Three-Column Radiator.

The dealer who handles IDEAL Boilers and AMERICAN Radiators is equipped with the goods in which the public is interested, and about which it is best informed. This publicity pays the dealer who is ready to profit by it.

AMERICAN RADIATORS & IDEAL BOILERS

A Heating Outfit is More Efficient with NORWALL and SYLPHON SPECIALTIES

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New York	Cincinnati	Cleveland	Atlanta	Brantford, Ont.	Denver
Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco

Southern Notes

De Land, Fla.—W. C. Watts is placing plumbing work in three new houses here.

Florence, S. C.—C. D. Bray has under way the plumbing in two new residences at Latta, S. C.

Augusta, Ga.—Morris Plumbing Company has contracted for the plumbing in six new residences here.

Savannah, Ga.—Geo. C. Morris has engaged in the plumbing business here at 302 Thirty-third street, east.

Jacksonville, Fla.—W. F. Forbes & Co. have moved their plumbing business into improved quarters at 9 East Church street.

De Land, Fla.—Watts & Miller have recently completed the plumbing work in an elegant new house here for C. D. Landis.

Sanford, Fla.—Geo. H. Fernald Hardware Company has under way the plumbing work in a new home at Eustis, Fla., for J. H. Kinser.

Charleston, S. C.—John F. Tobin & Bro. have been engaged with the installation of a plumbing system for the German Lutheran Church here.

Charleston, S. C.—W. J. Kennedy has engaged in the plumbing business here at 39 South street. He would be glad to hear from dealers in that line.

Palatka, Fla.—The Kennerly Pipe Fitting and Plumbing Company has under way the plumbing and heating work in a new hotel and store building here.

De Land, Fla.—R. D. McDonald has contracted for the installation of a modern plumbing and heating equipment in a handsome new residence here.

Atlanta, Ga.—Loftis & Bodenreiter have an excellent contract nearing completion in that of the plumbing in the new Rhodes building on Marietta street.

Tampa, Fla.—K. R. Lau, a true product of old Münich, announces that he has opened a branch establishment of his plumbing business at West Tampa.

Jacksonville, Fla.—Geo. H. Keefe has on his books contracts for plumbing installations in six fine residences in the Springfield and Riverside sections of this city.

W. R. Johnson's new and up-to-date plumbing and heating store, recently opened on Maine street in New Canaan, Conn. Mr. Johnson is at the right and the ingenious hitching post, consisting of a piece of pipe set in the sidewalk and an open tee across the top, may be copied by other members of the trade.

Charleston, S. C.—The Rawls-Minnis Company is engaged with the installation of plumbing and heating works in Dr. Lane Mullally's residence at 51 Meeting street.

Jacksonville, Fla.—C. W. Hohl has succeeded to the lucrative plumbing business of D. L. Rathbone at 405 Main street. He would be glad to hear from dealers in that line.

Jacksonville, Fla.—J. P. Mathis has opened a plumbing business at 1523 Ionia street, where he would be pleased to have manufacturers and jobbers send their descriptive matter.

Charleston, S. C.—T. J. Williams, an effervescent though modest South Carolinian, announces to us that he has secured the plumbing contract for the new Morris street Baptist Church.

Jacksonville, Fla.—S. G. Bonis & Co. are engaged with a $48,000 contract in that of the plumbing and heating in a new ten-story hotel building here at Forsyth and Hogan streets.

Charleston, S. C.—R. M. Masters has two excellent contracts in progress, in those of the plumbing and heating in the new courthouse at Manning, S. C., and in a new school building at Brunswick, Ga.

Wilmington, Del.—The plumbing, gas and steamfitting firm of Biddle Bros. is now nicely located in its new quarters at 849 Orange street. This firm is composed of Arthur Biddle and Harry Biddle.

Augusta, Ga.—Thos. G. M. McAuliffe, who conducts one of the most extensively stocked establishments in the south, has recently completed an $8,000 contract for the plumbing in the Fifth Ward School here.

St. Petersburg, Fla.—Mangold & Turney have recently finished plumbing installations in five new residences here and are at the present time placing a similar equipment in a new house for Mrs. Fisher.

Tampa, Fla.—W. E. McAndrews will move his plumbing business from his present quarters at 404 Cass street to a larger building at 306 Cass street. Brother "Mc" reports splendid progress in all departments of his business.

Brunswick, Ga.—The Glynn Plumbing and Tinning Company is the style of a new firm to engage in business here under the management of Mr. Hoyt. They would be glad to have catalogues and descriptive matter from dealers in those lines.

Savannah, Ga.—Alfred Roddier, the youthful inspector of plumbing of this city, recently called a meeting of the master plumbers of this city for the revisement of the master plumbers of this city for the revision it will probably be made on an early day.

Charleston, S. C.—A. J. Riley has executed of late an extensive list of contracts for the plumbing and heating work in several new buildings at the Charleston navy yard. Similar contracts have also been completed by him in several non-commissioned officers' quarters at Fort Moultrie, S. C.

Tampa, Fla.—C. E. Reed will engage in the plumbing business here on June 1, conspicuous, suitable

quarters having been leased on Franklin street. Mr. Reed has conducted a similar business for some years in Bartow, Fla., and it is his intention to dispose of his interests there to enter this broader field.

Orangeburg, S. C.—John McNamara has added a plumbing department to his hardware business here, which will be under the supervision of Mr. Harrison, formerly associated with the Edisto Plumbing Company of this place. Mr. McNamara would be glad to hear from manufacturers and dealers of plumbing and heating goods.

Tampa, Fla.—D. W. Shea, now the satisfied owner of a genuine red "whoa" cart, has some splendid work to his credit. Included in this list should be mentioned the plumbing in a new residence at Fort Meyer, Fla.; a similar equipment in a beautiful new home in Tampa for J. Lopez and the plumbing and heating in a new hotel at Sulphur Springs, Fla.

Athens, Ga.—The Dornblatt Plumbing Co. has built up quite a reputation by the quantity of work it has executed of late. The list of contracts recently completed include the plumbing and heating in the new Post Office building here, the plumbing and heating in the new Athens High School and a $10,000 plumbing installation in the new Georgian Hotel in Athens.

Jacksonville, Fla.—Coons & Golder have proven themselves lively competitors in their field. Few shops in the south can show an equal amount of work on their books. This concern has at the present writing about forty-nine men on its payroll. A few of its contracts for plumbing and heating work include the following structures: Y. M. C. A. building in Jacksonville, Atlantic National Bank building in Jacksonville, Volusia County Bank in De Land, new mansion of N. B. Borden at Fernandina and the new Sea Board Air Line depot in Live Oak, Fla.

E. De Forest Winslow.

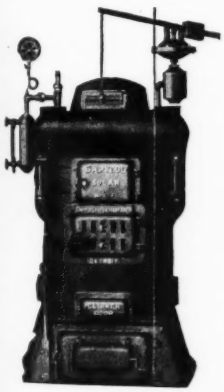
Trade Literature

From A. Weiskittel & Son Co., Baltimore, Md.: "New Fire King Gas Ranges," a booklet, 24 pages, 6x9¼ inches, in an attractive cover and printed upon heavily glazed paper, containing numerous illustrations of these gas ranges and gas water heaters, list prices, dimensions, sizes of ovens.

From the Williamsport Radiator Co., Williamsport, Pa., a paper covered booklet, 28 pages, 3½x6¼ inches, containing sizes, ratings and list prices in regard to the Craig steam boilers and hot water heaters and also price list and heights of Koran radiators. This catalogue will be sent upon application, mentioning "Domestic Engineering."

From Federal-Huber Company, Chicago: "U. S. Treasury Department Standard Plumbing Fixtures," a catalogue, 52 pages, heavy, highly glazed, 4½x8¼ inches, with heavy princess cover. This catalogue is intended to meet the needs of architects, inspectors and contractors who are interested in United States Treasury Department construction work, and especially rela-

Capitol Solar Boilers



You can depend absolutely on the **Capitol Solar** when you need a round boiler. The Firepot is deep and corrugated, the overhanging lobes extremely sensitive and give remarkably quick action to the boiler.

The sections above, by which additional capacity is given, are easily assembled.

The grate is especially adapted for residence use because of its simple construction and ease of operation.

Made in sizes suitable for every need of a round boiler.

Write for sizes, capacities and measurements.

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NEW YORK	129 Worth St.	MINNEAPOLIS, MINN., Plumbing & S. F. Supplies Co.
CHICAGO	34 Dearborn St.	ST. LOUIS, MO., L. M. Rumsey Manufacturing Co.
OMAHA	916 Farnam St.	DENVER, COLO., Kellogg & Stokes Stove Co.

tive to the Post Office Department. It presents in a clear and concise manner the various plumbing fixtures of this firm. Copies of this valuable booklet may be obtained by writing the company and mentioning "Domestic Engineering."

From the Honeywell Heating Specialty Co., Wabash, Ind.: "How to properly design and install the Honeywell System of Hot-Water Heating," a booklet, 52 pages 4x6½ inches, containing various illustrations and plans with very complete information as to the manner of properly installing the various specialties of this company. This booklet will be sent upon application mentioning "Domestic Engineering."

From United States Sanitary Mfg. Co., of Pittsburg, Pa., catalog, cloth, 168 pages, 4¼x7¼ inches, printed upon heavy highly glazed paper and containing many half tone illustrations of lavatories, sinks and bath tubs. Full information is given as to the sizes and various roughing-in measurements. On the last page is pasted one of the green and gold guarantee labels found on the various products of this company.

From Department of the Interior, United States Geological Survey, Washington, D. C.: "Results of Purchasing Coal Under Government Specifications," by John Shober Burrows, Bulletin 378, containing 44 pages 6x9 inches. This bulletin also contains a paper by Dwight T. Randall upon "Burning the Small Sizes of Anthracite for Heat and Power Purposes."

From Consolidated Engineering Co., Chicago, Ill: Part one, Catalogue No. Five, 94 pages, 5½x8½ inches. This catalogue is printed on glazed buff-tinted paper and contains full information regarding the Van Auken System of Vacuum Heating. It contains numerous illustrations of buildings in which the system has been placed; and it also shows diagrams illustrating the manner of installing the system besides much other valuable information in regard to vacuum heating. The catalogue will be sent upon application by mentioning "Domestic Engineering."

Book Reviews

From the American School of Correspondence, Chicago, Ill.: "Mechanical Drawing," a practical manual of self-instruction in the art of drafting, lettering and reproducing plans and working drawings. By Ervin Kenison, S.B., instructor in mechanical drawing, Massachusetts Institute of Technology, Boston, Mass. Printed upon heavy glazed paper, 138 pages, 6½x9½, illustrated, cloth, $1.00. This valuable work contains practical instruction from start to finish regarding the subject which is treated in a manner that should make the subject much easier to master when studied at home during the evening or in unoccupied hours, and leads to the complete understanding of the subject in hand. The instruction given upon drawing instruments and material is especially valuable and should interest the apprentice in every plumbing shop in the country and all others who desire clear and concise instruction upon the subject.

Hope, Ark.—The Hope Hardware Company, of 120-122 Elm street, has added a plumbing department to its business.

Government Work

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect, James Knox Taylor, until 3 o'clock p. m., June 9, 1909, for the installation of a vacuum system for heating apparatus, house pumps, etc., in the U. S. Post Office and Court House, Detroit, Michigan.

Washington, D. C.—Sealed proposals will be received at the office of the Supervising Architect, James Knox Taylor, until 3 o'clock p. m., June 16, 1909, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring and standard clock system), of the U. S. Post Office and Court House at London, Kentucky.

An Old Hand.

Recruiting Sergeant—"Do you know anything about the drill?"

Recruit—"Av coorse. Didn't Oi jist tell ye Oi wurked in a quarry these foive year past?"—Philadelphia Record.

Meaningful.

"William," she said, "means good. James means beloved. I wonder—" A flush mantled her cheeks. "I wonder," she softly murmered, "what George means."

"George means business, I hope," said mother, looking up from the Easter wedding announcement in the evening paper.—Catholic Times, London.

Patents

920,774. Water-Supply System. Robert H. Nelson, Dixon, Ill.

920,779. Blow-Off Valve. Joseph Rothchild, New York, N. Y., assignor to John Simmons Company, New York, N. Y., a corporation of New York.

920,883. Thermostatic Temperature Regulator. William J. Ruff, Quincy, Ill., assignor, by mesne assignments, to Charles J. Tagliabue, Brooklyn, N. Y.

920,797. Pipe-Vise and Die-Carrier. Ezra B. Werner, Hoopeston, Ill.

12,951. Flush-Valve. Ernest D. Barrett, New York, N. Y., assignor to Flushovalve Company, New York, N. Y., a corporation of New York.

920,465. Water-Closet. Arthur M. Houser, Chicago, Ill., assignor to Crane Company, Chicago, Ill., a corporation of Illinois.

920,268. Hydraulic Valve. Samuel S. Caskey, Philadelphia, Pa., assignor to Caskey Valve Company, New York, N. Y., a corporation of New York.

920,365. Water-Closet Cistern. Charles H. Moore, New York, N. Y.

920,371. Sanitary Protecting Means for Water-Closet Seats. George McClory, Paterson, N. J.

920,373. Air-Valve for Radiators. William P. McDaniel, Omaha, Nebr.

920,390. Hot-Water Heater. Jesse Reesor and Christopher W. Steel, Toronto, Ontario, Canada.

920,472. Testing Attachment for Spring-Loaded Valves. William E. Jerauld, Boston, Mass., assignor to American Steam Gauge & Valve Manufacturing Company, Boston, Mass., a Corporation of New Jersey.

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